**Blackout-Proofing Your Commodore 64**

February 1989
$2.95 U.S.
$3.95 Canada

# Commodore
MAGAZINE

The Magazine for Commodore and Commodore Amiga Users

## BUZZWORDS
*Guide to*
**Programmers' Slang**

**Software Reviews**
64 & 128 *Platoon, Rockford*
AMIGA AmigaDOS 1.3,
*Rocket Ranger*

*Plus*
The *Red Storm Rising* Ultimate Challenge—
WIN A TRIP FOR TWO!




KILLER
TECHNO COP
US GOLD
Technocop. You're bad. You're cool. You're part of the Enforcers, a high-tech police task force. And it's up to you to take down the sleazeball members of an organized crime empire and restore safety to the city.
Your weapons? An .88 Magnum (it's twice the size of Harry's), a snare gun, a criminal radar locator and a computer wrist watch. And that's just on you. Your car (a V-Max, the baddest thing on wheels) is equipped with rapid fire machine guns, killer bombs, a crime computer and turbo acceleration.
Your mission? Race down savage highways and blow away punks. Check out seedy buildings where rats and thugs are buddies. If you're tough enough to survive, then it's back in the V-Max and on to the next crime scene.
Win a trip to California*
See package for details.
Another intensely fun game from
US GOLD
*OH & MI residents: for entry form send SASE to U.S. Gold Rush Entry Form, TRW/Dept. T, 10 E. 34th St., New York, NY 10016. Technocop is available for the Amiga, Apple II, Atari ST, Commodore 64/128, and IBM PC & Compatibles. Screens from Atari ST. U.S. Gold and Technocop are trademarks of U.S. Gold, Ltd. U.K. Amiga and Atari ST versions © 1988 Imagexcel. Apple II, Commodore 64/128, and IBM PC versions © 1988 Gray Matter. Distributed by Epyx. © 1988 Epyx, Inc.

# We turn C128 owners into C128 users. (For only $9.98)




## A subscription to Loadstar 128 quarterly disk brings you a 5¼" disk, chock-full of great programs for your Commodore® 128 every quarter for just $9.98.

### What a way to go, 128!

**Loadstar 128** is a new software collection designed specifically for the Commodore 128 by the editors of Loadstar. Every three months you will receive a new 5¼" disk filled with new 128-only programs *not found* in our monthly LOADSTAR collection.

### Use The Full Power of Your 128.

**Loadstar 128** issue #1 contains eight great programs for your C-128, taking advantage of the 128 features like the 80-column format, larger memory, and a more powerful BASIC.

**Contents of Issue #1**
*(Available as a back issue)*

**Chart 128**—A chartmaking program.
**Carbuyer's Scratchpad**—Make the best buy on that new or used car.
**Treasure Trove**—A challenging card solitaire game.
**Boris**—Nine levels of chess.
*Plus 4 more great programs!*




### The Best Software Value for the 128.

**Loadstar 128** is delivered direct to you four times each year for only $39.95. That's only $9.98 an issue. So order today with the attached coupon or call toll free 1-800-831-2694.

### Money-back guarantee.

If you are not satisfied with Loadstar 128 for any reason, return your first issue for a full refund.

## Call toll free 1-800-831-2694.

**YES!** Please rush me my first issue of **Loadstar 128** to start my one-year subscription for my Commodore 128 for only $39.95 postage paid. (Canada/Mexico $44.95, Overseas $57.95) Make checks payable to Softdisk, Inc. in U.S. funds.

(Louisiana residents add 4% sales tax).

Name ______________________________

Address ______________________________

City ______________ State ______ Zip + 4 ________–______

Home Phone (______) ______–__________ Ext. __________

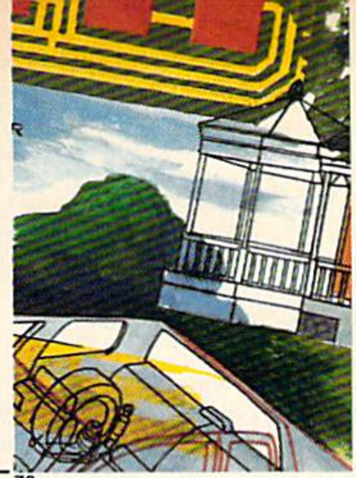
❑ Discover ❑ AmEx ❑ VISA/MC ❑ Payment Enclosed (*U.S. funds only!*)

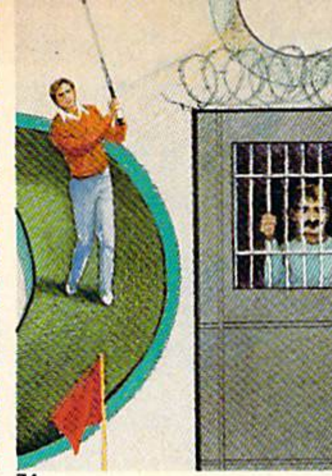
Card # ______________________ Exp. __________

Signature ______________________________

**SOFTDISK, INC. P.O. Box 30008 • Shreveport, La. 71130-0008 CO029**

Commodore
MAGAZINE
FEBRUARY 1989, *Volume 10, Number 2*


70


74

## FEATURES

**AMIGA CAD PROGRAMS** 70
Computer-Aided Design programs are usually associated with professions like architecture and engineering. But the Amiga brings CAD capabilities to anyone with the need or desire for accurately-scaled drawings for any purpose.
*by Gary V. Fields*

**DIGITEK** 74
A unique product development system that has spawned several high-quality games over the past year has brought Digitek into the Amiga spotlight. Find out what the publisher of *Vampire's Empire* is going to do for an encore.
*by Russ Ceccola*

## COVER STORY

**BUZZWORDS: A GUIDE TO COMMODORE PROGRAMMERS' SLANG** 66
From Berkeley to Boston a new Commodore lingo has emerged that distinguishes the Commodore insiders from the wanna-be's. We've compiled a glossary of these terms, so our readers can keep up with power-geek (look it up) terminology.

**COVER PHOTO:** *Charles Bartholomew*

## REVIEWS

**64 AND 128 SOFTWARE REVIEWS**
Platoon *by Russ Ceccola* 18
Rockford *by Mark Cotone* 20
Rastan *by Scott A. May* 22
Computer Study Guide for the SAT *by Edith Chasen* 24
Stealth Mission *by Jeffery Scott Hall* 28
geoWrite Workshop 128 *by Gary V. Fields* 30

**AMIGA SOFTWARE REVIEWS**
Rocket Ranger *by Jeffery Scott Hall* 32
Shadowgate *by Russ Ceccola* 34
PHASAR *by Gary V. Fields* 36
Ultra DOS Utilities *by Gary V. Fields* 38
AmigaDOS 1.3 *by Steve King* 42

**AMIGA HARDWARE REVIEWS**
X-Specs 3D *by Jeffery Scott Hall* 48

## DEPARTMENTS

**LETTERS** 4

**NEWS** 6

**TIPS & TRICKS**
Hints for Fun and Utility
*Compiled by Louis F. Sander* 12
Gold Mine
*Compiled by Louis F. Sander* 14

**RED STORM RISING ULTIMATE CHALLENGE ANNOUNCEMENT** 16

**INSIDE Q-LINK**
Hints for Online Conferences *by Robert W. Baker* 50

**ADVENTURE ROAD**
Interfacing the Facts *by Shay Addams* 52

**PROJECTS**
Blackout-Proofing Your Commodore 64 *by Jerry Penner* 56

**AMIGA UPDATE**
Amiga Public Domain *by Graham Kinsey* 58
The Amiga—Quite a Character *by Matthew Leeds* 60
Amiga Animates Beckett *by Barbara Ann Rosenberg* 62

**PUMPING GEOS**
Pumping GEOS with Brian Dougherty *by Mark Jordan* 64

**128 MODE**
Creating an Arcade Game: Part 2 *by Mark Jordan* 78

**PROGRAMMING**
Conjuring Sprites *by Mike Rivers* 83
The Delphic Oracle *by Gerhard F. Schilling* 85
Commodore Sixty-Fore *by Mike Lewis* 89
Wiz-Bang *by Philip Hughes* 95

**HOW TO ENTER PROGRAMS** 124

**MAGAZINE ENTRY PROGRAMS** 126

**ADVERTISERS' INDEX** 128



**To the Editor:**

You did a good job of covering the available C128 business software in the November 1988 issue of *Commodore Magazine.*

I was surprised, however, that *The Big Blue Reader* was not mentioned. *Big Blue Reader* is not an MS-DOS emulator, but rather it is a unique and easy-to-use file transfer program designed to transfer word processing, text and ASCII files between Commodore 128/64 and PC-compatible MS-DOS disk formats. The 1571 or 1581 is *required.*

*Big Blue Reader* gives Commodore 128 users a link to the IBM PC which is the industry standard for business. *Big Blue Reader 128/64* has allowed many Commodore 128 owners to use their C128 at home then transfer their files to standard MS-DOS disk for use on their PC's at the office.

*Big Blue Reader* is now available for the Commodore 64.

*Sincerely,*
*Michael R. Miller*
*President,*
*SOGWAP*
*115 Bellmont Road*
*Decatur, IN 46733*

**To the Editor:**

In your November issue were two feature articles: one on Cinemaware and one on software (or rather, the lack of software) for the 128. The Cinemaware article talked about how their games require large amounts of memory and speed and how they had trouble porting their games down to the 64. I think they are ignoring a very good, high-memory machine: the Commodore 128. The 128 has the memory and, when in fast mode, the speed required for their games. With the introduction of the 128D and its 80-column, hi-res graphics, the 128 even has the graphics to support Cinemaware. So why then are they not taking advantage of it?

*Sincerely,*
*Darren Zimmerman*
*Newark, NJ*

**Dear Gary Fields:**

I enjoyed reading "Getting Down to Business" in the November 1988 issue. I got a chuckle however, when I read the statement that your favorite spell checker is "large and picky enough to prevent me from embarrassing myself to [sic] often." Of all places for an embarrassing misspelling—the very sentence praising the spell checker! In fact, the very two (too? to?) word phrase which reserves the possibility that an occasional misspelling might slip through! I think you did this on purpose. If so, I like your sense of humor. You effectively made the point that a writer must not rely too heavily on his machines. The article was informative and well written. Keep up the good work!

*Sincerely,*
*Bill Morrow*
*Bessemer, AL*

P.S. No, I am not an English teacher. I am a cemist.

**Dear Mark Jordan:**

As a frequent GEOS user, I enjoy your column in *Commodore Magazine.* As an English major, and after 40 years in the ministry, I tend to follow the acceptable rules of grammar, hence would cast my vote for "mice" for those buffs who have more than one "mouse."

Popular usage does have some influence on what is accepted, however, and some rules may be made to be broken, so in this case perhaps the majority should rule. I just checked with my wife, and she agrees that "mouses" is better. I really do win one once in a while.

*Sincerely,*
*Ken Marken*
*Mentone, IN*

**Dear Mark Jordan:**

It is my belief that the plural form of "mouse," when referring to computer input devices is "mouses."

*Sincerely,*
*Anson Turner*
*Swansea, MA*

**Address letters for publication to:**
**Letters Editor, *Commodore Magazine,***
**1200 Wilson Drive, West Chester, PA 19380**

Commodore
MAGAZINE

Publisher
**Julie Bauer**

Managing Editor
**Jim Gracely**
Editor
**Susan R. West**
Technical Editor
**Mike Rivers**

Art Director
**Gwenn Knapp**
Assistant Art Director
**Wilson Harp**
Art Production
**Bob Clark**
Production Manager
**Jo-Ellen Temple**

Circulation
**Kenneth F. Battista**

**ADVERTISING SALES**
**Rebecca Cotton Leister**
Commodore Magazine
1200 Wilson Drive
West Chester, PA 19380
(215) 431-9259

*Commodore Magazine*, Volume 10, Number 2, February 1989.

*Commodore Magazine* is published monthly by Commodore Magazine Inc., 1200 Wilson Drive, West Chester, PA 19380, U.S.A. U.S. subscriber rate is $35.40 per year; Canadian subscriber rate is $45.40 per year; Overseas subscriber rate is $65.00 per year. Questions concerning subscription should be directed to Commodore Magazine Subscription Department, Box 651, Holmes, Pennsylvania 19043. Phone (800) 345-8112. In Pennsylvania (800) 662-2444. 



THINK YOU'RE BAD?
PROVE IT.
TAKE ON THE BODY-BASHING BAD BOYS OF THE GWF.
TAKE DOWN
VIKING
IRON HEAD
The Dark Raider of gladiators, his deadly powers include the Head Butt and Back Breaker.
SGT. SLAM
SEA DAWG
Half pirate, half pitbull, his Body Slams wreak mutiny on the mat! He'll feed yer carcass to the sharks with one hardy Head Slap.
TOMAHAWK
SULTAN
MR. COOL
BEWARE:
Eight wimp-wasting wrestlers are ready to rack you raw with some serious pain.
NINJA
The Oriental assassin with a ginsu style, his Head Throw and Drop Kick will chop you into a slab of sniveling sushi. Banzai!
Hot graphics and digitized sound put you right in the ring—fly off the top rope for a Big Splash!
GAMESTAR WRESTLING FEDERATION HIGHLIGHTS
Intense 1- or 2-player tag team action lets you thrash computer challengers or bust up your buddies—with pain-inflicting ease!
Each GWF maniac has his own mean set of merciless moves—Pile Drivers, Airplane Spins, Gut Busters, and more!
Win the GWF championship belt, then strut your stuff around the ring so the chicks can check you out!
HOW TO ORDER: Visit your retailer or call 800-227-6900 for direct Visa/MasterCard orders.
Direct price is $29.95 for the Commodore 64/128® version. A shipping and handling charge of $4.50 applies to all direct orders.
Sales tax will be added to orders in California and Texas.
GAMESTAR
Commodore 64 screens shown. Gamestar and Take Down are trademarks of Gamestar. Commodore 64/128 are registered trademarks of Commodore Electronics Limited.

## F-18 Hornet

Absolute Entertainment has introduced **F-18 Hornet,** a jet fighter pilot simulator for the Commodore 64. The prospective "Top Gun" will take off from the USS Enterprise carrier deck on ten missions of varying difficulty in locations around the world. **F-18 Hornet** has a suggested retail price of $34.95. For further information contact: Absolute Entertainment, 251 Rock Rd., Glen Rock, NJ 07452. Phone: (201) 652-1227.





## Ultima IV

Go back to Britannia with ORIGIN's new release—the Amiga version of **Ultima IV: Quest of the Avatar.** Over 16 times larger than **Ultima III,** the new fantasy role-playing installment will be distributed by Broderbund Software. **Ultima IV** features hundreds of interactive characters, 30 magic spells and optional mouse interface. **Ultima IV** for the Amiga retails for $59.95 (also available for the Commodore 64). For more information contact: ORIGIN, 136 Harvey Rd., Building B, Londonderry, NH 03053. Or call: (603) 644-3360.

## Street Sports Football

The Epyx neighborhood gang is back, and this time football is their game. In a street or on a construction site, you can choose up sides and go up against the computer or a friend at beginner or advanced levels. **Street Sports Football** for the Commodore 64 retails for $19.95. For details contact: Epyx, Inc., 600 Galveston Dr., Redwood City, CA 94063. Phone: (415) 368-3200.

## Photon Video Cel Animator

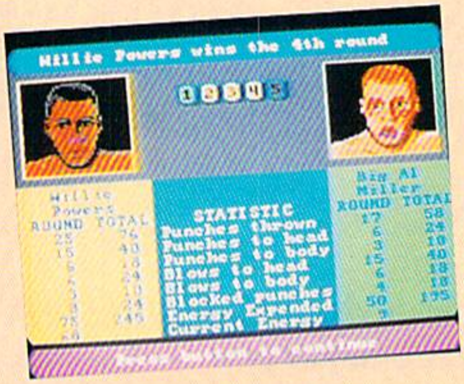
**Photon Video Cel Animator** from MicroIllusions helps you animate your Amiga images. Each frame of animation is created once and numbered; the animation is laid out as a sequence of the numbers which can then be modified. You can change timing, add music or replay your creation as a continuous loop. You can also import images from **Photon Paint** and record your completed animations on videotape. The program retails for $149.95. For further details contact: MicroIllusions, 17408 Chatsworth St., Granada Hills, CA 91344. Or call: (800) 522-2041.

## Arcade Game Construction Kit

Got an arcade game idea that's bigger than *PacMan* but you're all thumbs at programming? Broderbund's new **Arcade Game Construction Kit** for the Commodore 64 gives you the tools to put that great maze or shoot-'em-up game on disk with up to 50 levels of gameplay. Several sample games are included for you to modify. You can also make "GiftDisks" for friends (the program is not required to run GiftDisks). **Arcade Game Construction Kit** retails for $29.95. For more information contact: Broderbund Software, Inc., 17 Paul Dr., San Rafael, CA 94093-2101. Phone: (415) 492-3200.

## TKO

Accolade's **TKO** for the Commodore 64 promises to put you right in the ring. This first-person perspective boxing match pits you against twelve different opponents in a three-, five- or ten-round bout. You can go up against the computer or a friend for the title of Accolade Heavyweight Champion. **TKO** has a suggested retail price of $29.95. For more information contact: Accolade, 550 S. Winchester Blvd., Suite 200, San Jose, CA 95128. Or call: (408) 985-1700.




*Continued on page 8*

*Continued from page 6*

## Epyx Goes Online

Epyx, Inc. has provided a new service to their customers—the **Epyx On-Line Service Center** (BBS). Anyone with a modem can call for game hints, technical support, an on-line catalog, new product announcements, and warranty and update information. The service is provided free of charge. You can reach the **Epyx On-Line Service Center** by dialing (415) 364-0281 (300/1200 baud, 8 bits, no parity, 1 stop bit).

## Aussie Joker Poker Sweepstakes

Mindscape is introducing its new computerized card game with a sweepstakes featuring $200,000 in cash and prizes. **Aussie Joker Poker,** for the Commodore 64 or Amiga, lets up to 90 players compete in a card game made popular in Australia. Twenty contest winners (chosen at random) will travel to Las Vegas to go head to head at **Aussie Joker Poker** for a top prize of $100,000. The deadline for entering is April 30, 1989. The Commodore 64 version of **Aussie Joker Poker** retails for $29.95, the Amiga version for $49.95. For further details contact: Mindscape, Inc., 3444 Dundee Rd., Northbrook, IL 60062. Phone: (312) 480-7667.

## Corruption

**Corruption** for the Commodore 64 and Amiga is Rainbird's fourth Magnetic Scrolls release. You take on the role of a London high financier who is accused of inside trading. You must use your wiles and interact with 15 other characters to survive this graphic adventure. **Corruption** for the Commodore 64 sells for $39.95, the Amiga version sells for $44.95. For more information contact: Rainbird, 3885 Bohannon Dr., Menlo Park, CA 94025. Or call: (415) 322-0900.

## Tax Command 64 or 128

Practical Programs has introduced **Tax Command** in versions for the Commodore 64 and 128. **Tax Command** is a menu-driven program for preparing your taxes directly on IRS forms or for record-keeping. Updates for following years will be offered to registered users at half price. The program is available for $49.95 (plus $2 shipping) from: Practical Programs, Inc., P.O. Box 93104, Milwaukee, WI 53203. Phone: (414) 272-7227.

## DeluxePrint II

**DeluxePrint II** is an updated version of Electronic Arts' popular Amiga print program. The program contains pre-designed formats to create signs, banners, letterhead, calendars and other printed materials. Over 150 multi-colored graphics and borders are included, and you can import images from EA's **DeluxePaint II. DeluxePrint II** retails for $79.95. For details contact: Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. Or call: (415) 571-7171.

## MIDI Magic

Brown-Wagh Publishing has released a MIDI sequencer designed specifically for the Amiga. **MIDI Magic** (developed by Circum Design) lets you record, play back and edit MIDI data generated by an electronic sequencer. The program features multichannel simultaneous recording and permits real-time, modular or step editing. **MIDI Magic** retails for $149.95 and requires MIDI interface, synthesizer and cables. For more information contact: Brown-Wagh Publishing, 16795 Lark Ave., Suite 210, Los Gatos, CA 95030. Phone: (800) 451-0900.

## National Multiple List

The **National Multiple List** is now available for potential home-buyers across the U.S. The new BBS provides a medium for homeowners, realtors or builders to list homes or properties for sale nationwide.

The service can be accessed free of charge by potential buyers and allows them to search for properties by location and price. This is the first national real estate listing available directly to home-buyers.

People who want to list their properties for sale pay a $25 fee per month (with two-month minimum).

For information on listing a property contact: The National Multiple List, Suite 11, 5401 Twin Knolls Rd., Columbia, MD 21045-3247. Voice Line: (301) 995-1118. Data Line: (301) 350-2396.

## F-14 Tomcat

Activision's **F-14 Tomcat** is a Naval Weapons Fighter School simulation for the Commodore 64. **F-14 Tomcat** features 80 randomly-assigned missions in five theaters of action: the Persian Gulf, Central America, Libya, Korea and Lebanon. The simulator sells for $39.95. For further information contact: Activision, 3885 Bohannon Dr., Menlo Park, CA 94025. Phone: (415) 329-0800.

*Continued on page 10*

*Continued from page 8*

## Space Station Oblivion

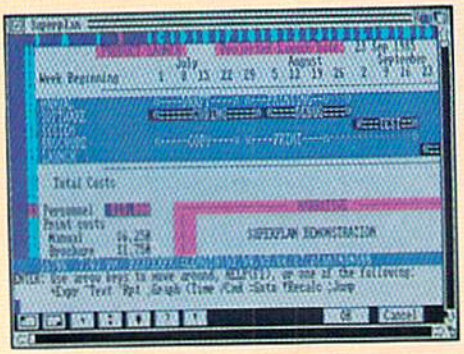
**Space Station Oblivion** is a new sci-fi thriller from Epyx for the Commodore 64 and Amiga. In the far-distant future you must save your own planet, Evath, from being thrown head-long out of orbit by one of Evath's soon-to-explode moons. Your mission is to release the poisonous gases brewing inside the distant moon before they reach the boiling point. The Amiga version of **Space Station Oblivion** sells for $49.95, the Commodore 64 version for $39.95. For details contact: Epyx, Inc., 600 Galveston Dr., Redwood City, CA 94063. Phone: (415) 368-3200.

## Super Releases from Precision

Precision, Inc. announced the release of two new products at the World of Commodore in Philadelphia. **Superbase Personal 2** is an Amiga database for users who don't require the database management language or forms editor included in **Superbase Professional 3.** The program still includes the text editor, mail merge capabilities and relational data entry. **Superbase Personal 2** retails for $149.95.




**Superplan** is Precision's new Amiga business tool that combines spreadsheet, project management and business graphics capabilities. The program is ARexx compatible, allowing users to exchange data with other programs (including **Superbase Professional 3). Superplan** has a suggested retail price of $149.95. For details contact: Precision, Inc., 8404 Sterling St., Suite A, Irving, TX 75063. Phone: (214) 929-4888.




## Magni 4004 Genlock Upgrade

Magni Systems, Inc. has added a software control option to their **Magni 4004 Genlock** for the Amiga 2000. The new option allows **4004** effects (cuts, fades, adjustable fade rates, etc.) to be controlled with Amiga function keys or a mouse. The user-installable upgrade is available for registered owners at a price of $75. The upgraded **Magni 4004 Genlock** retails for $1695 ($1995 with remote control option). For more information contact: Magni Systems, Inc., 9500 SW Gemini Dr., Beaverton, OR 97005. Phone: (800) 237-5964.

## PAGErender 3D

Mindware International has released an Amiga 3D animation and rendering package for use with Haitex Resources' X-Specs stereo glasses. **PAGErender 3D** provides a library of tools for building and restructuring animated objects. The program has a suggested retail price of $159.95. For details contact: Mindware International, 110 Dunlop St. W., Box 22158, Barrie, Ontario, Canada L4M 5R3. Or call: (705) 737-5998.

## *Red Storm Rising* Ultimate Challenge

The **Red Storm Rising** Ultimate Challenge, sponsored by **Commodore Magazine** and MicroProse Software is now under way! Here's a chance to show off your gaming skills and win a trip for two to Scotland and England, a Commodore 128D or many other prizes. See page 16 for more details.

Just so you know where you stand, here are some of the high scores to date around Commodore:

Greg Givler, Telecommunications Coordinator—16, 975 ER
Jim Gracely, Managing Editor—4040 ER
Mike Rivers, Technical Editor—1009 ER

As you can see, Greg is our in-house expert. Here are some tips from him to start you off:

* To get the highest possible score in each mission, you must destory all of the enemy ships and subs. When you have done this the "Mission Complete, Replay Y/N" message appears. If this message doesn't appear, it means there's a ship or sub you haven't found or destroyed yet.
* When you are told by your crew that a torpedo has been fired at you, don't panic. If the torpedo is more than 2000 yards away keep a watch on it, but don't be too concerned. At that range there is still time to get into position for a good shot.
* If a torpedo has closed to within 2000 yards—**panic!!** A noisemaker and a course change are good ideas, you should also increase your speed. It is best to get above the torpedoes. Enemy torpedoes tend to spiral deeper when they have lost their target, so if you stay above them, it will be more difficult for the "fish" to reacquire it's target—your sub!
* Don't be afraid to hit the Pause button. If things are getting too hot for you to sort out, hit pause and take time to think things through.

# Lou Sander's Tips & Tricks

*This month's crop of tips is especially wide-ranging, and is accompanied by two pieces of important news. First, we're holding another programming contest, the details of which are printed below. Second, our book of Tips & Tricks has a name. It's called* Lou Sander's Tips and Tricks for Commodore Computers, *and will include every item ever printed in this column, plus many additions and improvements. Publication is scheduled for March or April—keep your eyes open for specific announcements.*

*I'll keep my own eyes open for Tips & Tricks from you. Write them up, put your name on them, and send them to:*

*Louis F. Sander*
*P.O. Box 101011*
*Pittsburgh, PA 15237*

*Successful contributors will be paid at least $10 and will see their name and work in print.*

## Programming Contest

Here's a fun way to make $100 in your spare time. We're running a contest to find short and *useful* reader-written programs for Commodore computers. Here are the rules:

1. Programs must serve some *useful* purpose outside the world of computers. Programs for science, math, business, education, household calculations and similar uses are acceptable. Games and computer utilities are not. Of this month's programs, only Lotto would fit in the "useful" classification.
2. Programs must be *shorter than* four blocks on the disk. If the directory says one, two or three they are OK. If the directory says four, they are too long. Most three-block programs are shorter than 25 lines, but everything depends on the length of the lines.
3. Entries must be submitted on a disk, accompanied by a listing and instructions. Sorry, we cannot return this material to you.
4. Judging will be based on *usefulness*, originality and overall user friendliness. The best program will be featured in "Tips & Tricks" and will receive a prize of $100. The best of the others will be published and paid at our usual rates.
5. Entries must be postmarked by midnight, March 15, 1989. Send them to me, at the address at the head of this column.

*Louis F. Sander*
*Pittsburgh, PA*

**Salvaging Mutilated Disks:** Just because a disk is folded or otherwise mutilated doesn't mean it's totally ruined. A few days ago, someone who should know better mailed me an important disk without protecting it in any special way. No disk mailer, no cardboard, no styrofoam, no nothing—she just put it in an envelope and sent it.

As the package moved from the west coast to Pittsburgh, the Postal Service saw fit to fold it almost in half. When the mailman put it in my mailbox, he folded it around the normal-sized letters in the delivery, just as he always does with oversized material.

Needless to say, when I opened the envelope I saw a *very* sick diskette. Its edges were crinkled in a dozen places, and it wouldn't sit flat on the table. When I put it in my drive, it wouldn't even rotate. Since this pathetic piece of plastic held some very important software, I was willing to do anything to save it. What I did was easy and effective.

First I took scissors to the mutilated disk. I wanted to remove the inner plastic disk without doing it further harm. To do this, I carefully opened the top edge of the black plastic jacket, being extra careful not to cut or touch the inner plastic disk. (The "top edge" is the one opposite the oval opening where the heads have access to the disk. It's the edge you see when the disk is safely in the drive.) Touching it as little as possible, I carefully removed the inner disk from its envelope, observing that it was intact, flat and undamaged. That wasn't too surprising, considering how tough and flexible it is. I threw away the damaged black plastic jacket.

Then I performed the same surgery on an unmutilated floppy disk, this time being most careful with the outer plastic jacket. I removed the guts and threw them away.

Finally I slid my valuable inner disk into the second black plastic jacket, which left me with a mechanically-sound assembly that had an opening in its top edge.

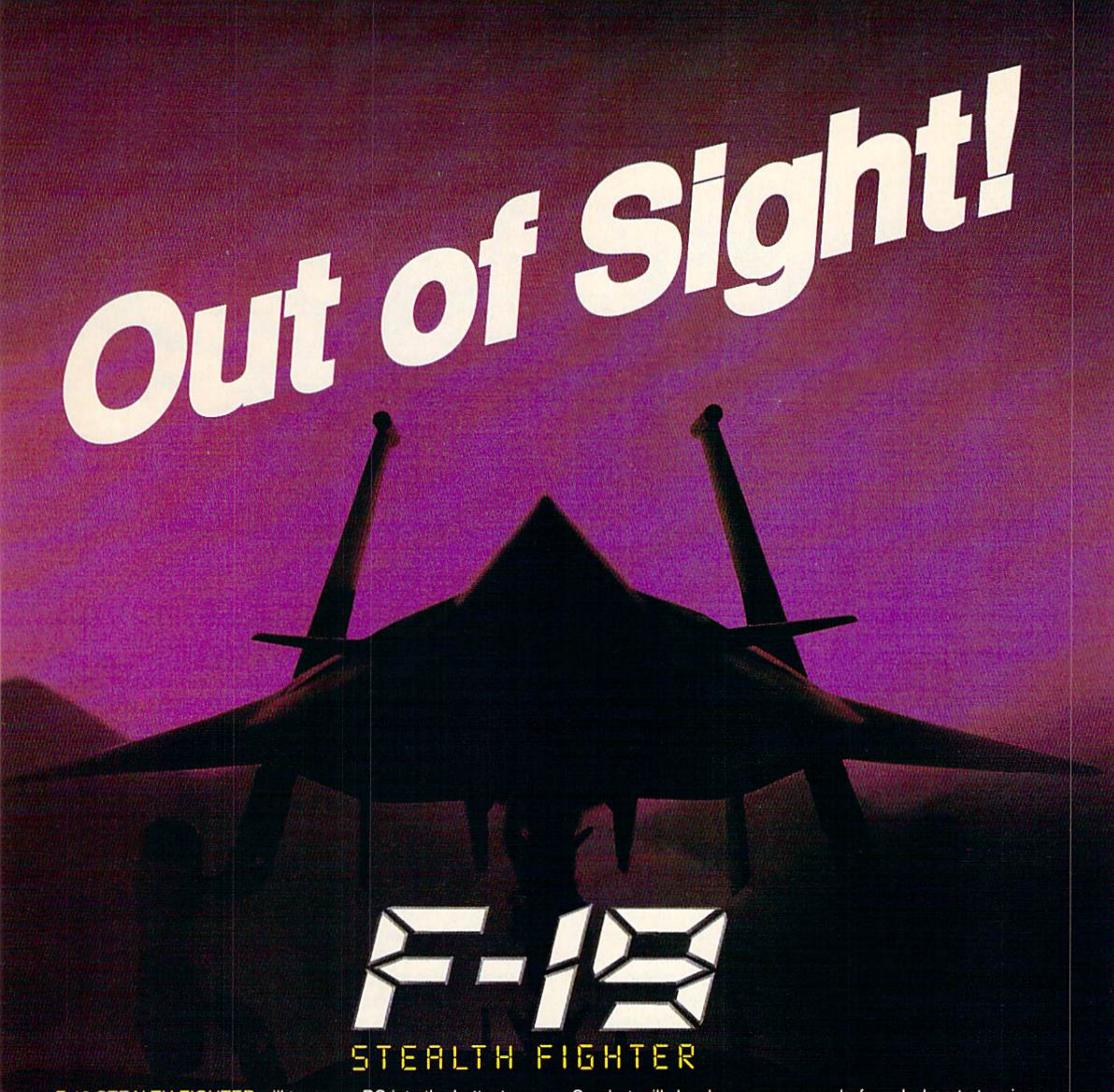
I put it in my drive and tried to load a directory. Everything seemed to work. I copied everything onto a new unaltered disk, and my software was as good as new!

*Louis F. Sander*
*Pittsburgh, PA*

**64 Sub Hunt:** You're in command of a Destroyer locked in battle with an Enemy Submarine. The sub's commander is aware of your presence and is taking evasive action. As the sub unpredictably changes course, you attempt to hit it with your Depth Charges.

Drop a depth charge by pressing any key as your ship passes over the sub. Each time you hit the sub, he's forced closer and closer to the surface. The game ends when he has been forced all the way up, and you pull alongside and board him.

*Continued on page 119*




F-19 STEALTH FIGHTER will turn your PC into the hottest new flying machine on today's electronic battlefront. The graphics are that vivid … the animation that smooth … and the feeling of flight that convincing. It's out of sight!

But F-19 is no joy ride. Dramatic game play challenges you with a lifetime of action. Fight your way through hundreds of missions packed into the real-world regions of Libya, the Persian Gulf, the North Cape and Central Europe.

Combat will dazzle you as never before. In heart-stopping dogfights, use TrakCam to lock onto enemy MiGs. Or engage TactiVue for an outside perspective that *always* keeps you and your target in sight.

To be literally out of sight, learn the secrets of stealth flying — maintaining a low electromagnetic profile to evade enemy radar and mastering the tactics that only a stealth pilot dares to try.







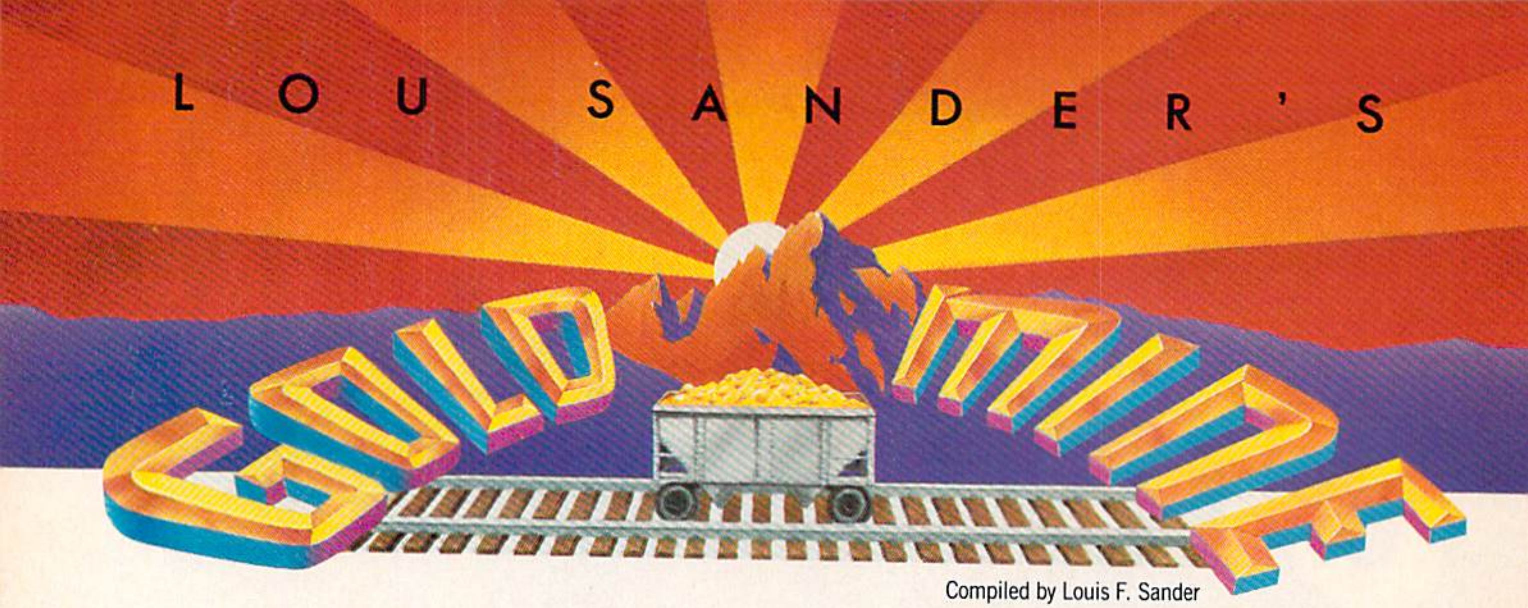
*Actual Screen Shots May Vary*

MICRO PROSE™
SIMULATION • SOFTWARE

180 Lakefront Drive, Hunt Valley, MD 21030 (301) 771-1151

For IBM-PC/XT/AT/PS2/TANDY/compatibles. Supports VGA, MCGA, EGA, CGA and Hercules graphics.

Can't find F-19? Call (301) 771-1151, weekdays 8am to 5pm EST and order by MC/VISA; or mail check/money order for $69.95 for IBM-PC/Tandy (specify disk size). U.S. funds only. MD residents add 5% sales tax. Free shipping in U.S.; $5.00 international. Allow 1-3 weeks for U.S. delivery.




Compiled by Louis F. Sander

*Here are some more great game tips for Commodore computers. Many of them work on the 64, 128 and Amiga, in addition to "off-brand" machines such as Apple and IBM.*

*With only a month between issues, the Assay Office has no way of testing every nugget that the Gold Mine produces. Also, many of the tips require skill as well as knowledge, or work as described only on one variety of machine. In other words, don't be too upset if a given nugget doesn't work for you.*

*If you'd like to share your own game tips with the world, write them up and send them to:*

*The Gold Mine*
*P.O. Box 101011*
*Pittsburgh, PA 15237*

*To increase the chances of seeing your tip in print, just follow these simple rules: Use a separate sheet of paper for each game, and combine all tips for one game onto one sheet. Put your name and address on every sheet you send. Combine all sheets into one envelope and send it in. Neatness counts.*

*I do favor the tips that are typed or printed, double spaced, on 8 1/2" × 11" paper. Handwritten tips are acceptable, but less likely to be picked for publication. My stomach gets upset when I receive little cut-up strips of paper or sheets that are torn out of spiral notebooks; do us all a favor and avoid them like the plague.*

*Whether you send in your own tips or not, please take pleasure in this month's column. And wherever you live in the world, remember that Gold Mine Rules!*

**Amazon:** When you bribe the dude, only give him $5,000.
*Christian Software*
*Address Unknown*

**Archon II:** At the beginning of the game or when you are low on energy, it is important to get more. You can build it up by moving your adepts to unoccupied spaces in their own demesne. You can conserve energy by not attacking an enemy with a demon or elemental on the same turn as you summoned it. It is important to have a high power bar. The more creatures you have on the board, the more power it takes to support them.
*Doug Cross*
*Sellersburg, IN*

**Beach Head II:** In the rescue scene the Allies can ignore the soldier on the top of the wall if the escaping prisoner is walking slowly. If he is walking fast, the Allies can ignore the machine-gun truck. This saves lots of time in destroying the tanks and trapdoors.
*Contributor Unknown*

**Below the Root:** You can go underground at any point by dropping an object at the right edge of the screen. This moves half of the object down to the next line on the far side of the screen, causing an opening your Quester can drop through. Light a honey lamp before dropping through, or carry the spirit lamp, so you can see well enough to keep from getting stuck in a wall! This also works in the IBM version.

Also, healing yourself before pensing animals will keep you from needing food or rest, and pensing the animal restores the spirit energy you used in healing.
*Jacob Ogles*
*Leesburg, FL*

**Championship Wrestling:** I prefer to use K.C. with this method, but anybody will do. Soften up your opponent with your favorite moves. When his power is low, kick him from the top rope, and he should fall down. Now use leg drops until you get 650 points. He won't be able to get up, so you can pin him or use your custom move. Remember, you can only get 999 points per person.
*Tom Donovan*
*Address Unknown*

**Commando:** At the second gate, soldiers come from all sides, making the famed "rude greeting approach" impossible. "Rude greeting" is standing to one side of the door and letting enemy soldiers run headlong into a stream of bullets. When you meet the second gate, approach quickly and start throwing grenades. You'll kill half of your enemies before they can even shout. Be careful, though, and don't stand still!
*Matt McLaine*
*Walterboro, SC*

**Demon Stalkers:** Save your character after achieving each level, especially the more difficult ones. If you don't, you'll wish you had when your character dies, and you have to replay the levels he conquered since you saved him last.
*Myron Brown*
*Craigsville, WV*

*Continued on page 112*

*The only computer games to earn an official* USA *license from the 1988 U.S. Olympic Team.*

# THE GAMES:™ SUMMER, WINTER, SPRING AND FALL.

## SUMMER EDITION:

**The heat is on in Seoul.**

Relive the heart-pounding excitement experienced by the 1988 U.S. Olympic Team.

Sprint down a track, clearing the high hurdles by a thousandth of an inch. Pole Vault to new heights.

Hold an iron cross on the Rings. Follow up with a triple twist in the Diving event. Then try for another medal or two in Sprint Cycling, Hammer Throw, Uneven Parallel Bars or Archery. It's your chance to make history.

## WINTER EDITION:

**Chilling competition in Calgary.**

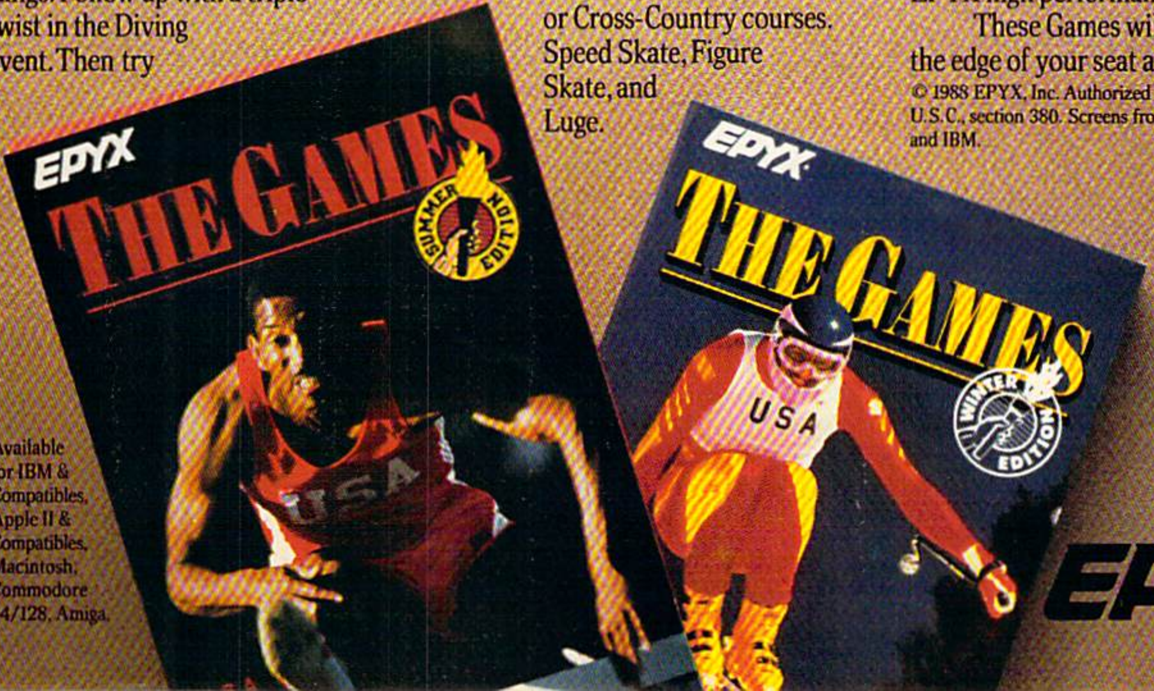
Rocket off the Ski Jump. Ski the Downhill, Slalom or Cross-Country courses. Speed Skate, Figure Skate, and Luge.

The Games feature dramatic camera angles, first person views, 3-D imagery and exciting sound effects. Plus opening, closing and award ceremonies.

Take on the computer, a country or your friends. (Up to eight can play.) And to make the action even more heated, play with an EPYX high performance joystick.

These Games will keep you on the edge of your seat all year long.






Available for IBM & Compatibles, Apple II & Compatibles, Macintosh, Commodore 64/128, Amiga.

EPYX®

Presenting the **Red Storm Rising**™ Ultimate Challenge

# Win a Trip for Two to

***Now Red Storm Rising — the gripping World War III submarine simulation by MicroProse Software for the Commodore 64 — is more exciting than ever. Your skill as Captain of a nuclear attack sub in the North Atlantic can win you and a companion an unforgettable visit to Great Britain!***

MicroProse Software and *Commodore Magazine* have convened a Board of Naval Examiners to find the *Admiral of the Fleet* — the very best *Red Storm Rising* nuclear submarine commander in the world.

## Grand Prize

In September, 1989, the *Red Storm Rising Admiral of the Fleet* and a companion will travel on a 7-day expense-paid travel award to Great Britain. They will visit Dunoon, Scotland, home of the US submarine base at Holy Loch from which *Red Storm Rising* players operate. Then it's on to London, where they will marvel at the huge, international 1989 Personal Computer Show. The *Admiral of the Fleet* will also win a complete library of current MicroProse Software titles for the Commodore 64, a one-year subscription to *Commodore Magazine*, and *Red Storm Rising* materials autographed by Tom Clancy, author of the best-selling novel, *Red Storm Rising*.

## Prizes for Runners-Up Too!

The First and Second Runner-up *Vice Admirals* will receive a Commodore 128-D Computer System, a complete library of current MicroProse Software titles for the Commodore 64, a one-year subscription to *Commodore Magazine*, and *Red Storm Rising* materials autographed by Tom Clancy.

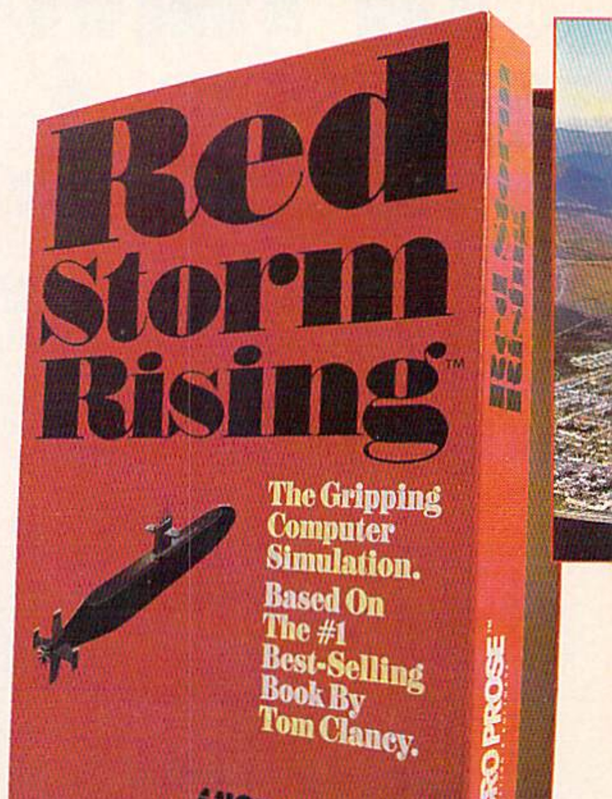
Another seven *Vice Admirals* will receive a complete library of current MicroProse Software titles for the Commodore 64, a one-year subscription to *Commodore Magazine*, and *Red Storm Rising* materials autographed by Tom Clancy.

## Strategy

First, send for your *Official Log Form* and complete *Rules* (see "To Enter" on next page). Then, start playing the full *Red Storm Rising* campaign game and learn to achieve maximum Efficiency Rating (ER). (For your initial entry and first round of competition, your best campaign will be the campaign with your highest ER.) Learn how to protect the ER of your campaign in progress by choosing the "Computer Log" option at the "Contact Screen" preceding each battle, and then saving your game. (The "Contact Screen" is shown at right.) If your performance does not meet your standards in the ensuing contact, you can re-play it (before going on to another battle) without losing your previous score. On the *Official Log Form* you will fill in the details of each of your most successful battles in your best campaign. Before you fill out the form, you might make photocopies so that you can keep trying for higher and higher ERs.



Contact Screen



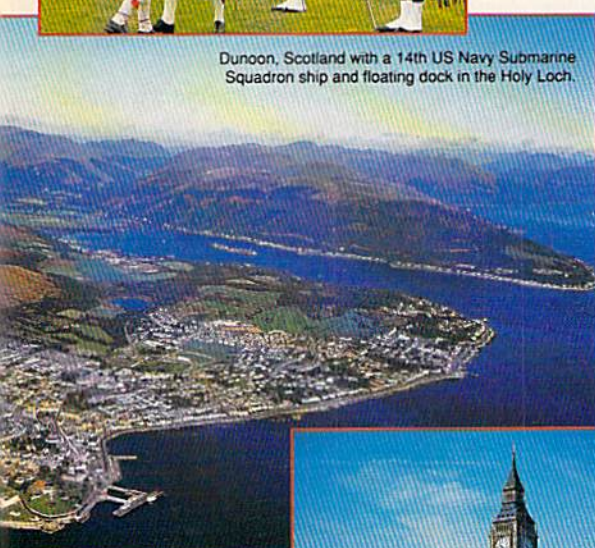

Commodore
MAGAZINE

sponsored by Commodore Magazine and MicroProse

# Scotland & England!







Dunoon, Scotland with a 14th US Navy Submarine Squadron ship and floating dock in the Holy Loch.





## To Enter

1. Obtain an *Official Log Form* and the complete *Rules* by sending a letter or postcard as soon as possible to the *Red Storm Rising* Board of Naval Examiners, 180 Lakefront Drive, Hunt Valley MD 21030. (Several pre-addressed postcards have been inserted into this edition of *Commodore Magazine*.)

2. Submit your **final** game save disk (**one disk only**) *and* a completed *Official Log Form* from your highest-ER *Red Storm Rising* Campaign to: *Red Storm Rising* Board of Naval Examiners, 180 Lakefront Drive, Hunt Valley MD 21030. Your entry must be **received** not later than March 31, 1989.

## Naval Operations: Orders

The Board of Naval Examiners will make every effort to ensure that the *Red Storm Rising Ultimate Challenge* is a fair competition and a meaningful test to all who enter. As you proceed into the higher levels of competition, the Board of Naval Examiners will advise you of specific examination procedures.

## The Timetable

| | |
|---|---|
| **March 31, 1989** | Deadline for Board of Naval Examiners to **receive** Official Log Form and final game save disk from Entrants seeking promotion to Admiral. |
| **April 3, 1989** | During this week, the Board of Naval Examiners will select 15 Rear Admirals from among All Entries received. |
| **April 10, 1989** | During this week, Appointments will be set for 15 Rear Admirals to be interviewed via telephone, by the Board of Naval Examiners. |
| **April 17, 1989** | During this week, the Board of Naval Examiners will interview the 15 Rear Admirals, and grant promotions to 10. |
| **April 30, 1989 (Red Sunday)** | Ten (10) Vice Admirals will compete in the Red Alert War Game for the right to be called Admiral of the Fleet. |
| **May 1, 1989** | Verification Process Begins; Vice Admirals return records from the Red Alert War Game. |
| **Late Sept., 1989** | Admiral of the Fleet and a companion depart on their 7-day travel award to Scotland and England. |

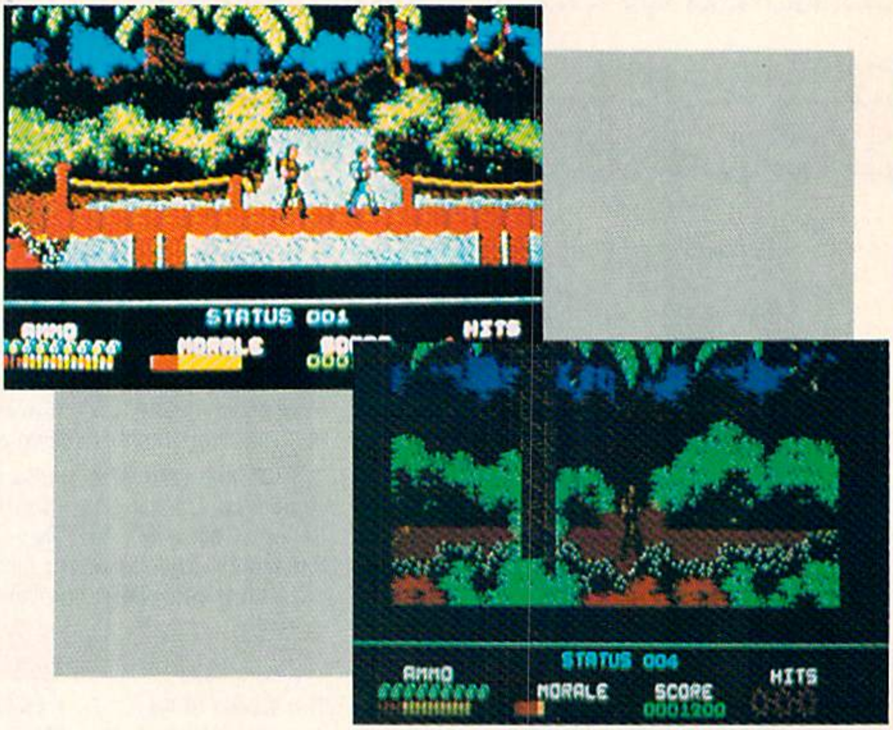
Keep your calendar open for all steps in the Timetable.

**Watch the News Section of *Commodore Magazine* for More Information on the Red Storm Rising Ultimate Challenge.**

Reviewed by Russ Ceccola

# Platoon

**Computer:** Commodore 64
**Publisher:** Data East
470 Needles Drive
San Jose, CA 95112
**Medium:** Disk
**Price:** $39.95




Games based on movies usually turn out to be half-baked attempts at entertainment software. Their only *raison d'etre* is usually to exploit the movie's copyright to the fullest extent. Sometimes this works, sometimes it doesn't. The casual gamer who doesn't buy much software or who doesn't read reviews of a game before buying is the prime target for the "based on the popular movie" trap.

*Platoon,* on the other hand, has none of these problems. The game substantiates all the flashy supportive advertising and is both fun and challenging to play.

*Platoon* actually consists of six sections that comprise a story. This plot is only loosely based on the movie's, but the one or two aspects that come from the movie, together with a general atmosphere that permeates the game, capture the spirit of the film. The game is based upon the premise and tag line for the film: "The first casualty of war is innocence." The object of the game is to make it through the six mini-games while keeping your morale high. A morale bar indicates how high this attribute really is.

The six sections are all well-designed. They each throw many obstacles at you, which hone your joystick skills in different areas. None of the sections are really very hard once you get used to the controls for that section. Each section takes a different length of time to finish, with an average length of about three or four minutes. By far the longest is the combination of Sections 1 and 2.

Sections 1 and 2 are joined together; you scroll from Section 1 (Jungle) to Section 2 (Village), with no disk access and screen blanking in between. This is a nice transition; the scenes blend well together from a story standpoint as well as visually.

In the jungle, you must make your way through an assortment of paths, avoiding enemy attackers and traps while trying to get to the village. The screen shows a side view of your man with paths going left and right and a pseudo-3D perspective showing paths going forward into the screen and out of the screen. The object is to explore the paths until you find a case of explosives and then the bridge that leads to the village. The explosives are automatically placed when you cross the bridge, causing an explosion a few seconds later.

The graphics are really good in Section 1, as they are throughout the entire game. However, I noticed one problem with this section of the game that doesn't go away with practice. In fact, this is the only problem that I found with the game. You sometimes find trip wires you must jump over that instantly kill one of the men in your six-man platoon. Each man is capable of receiving four enemy hits before given a "retired in action" status, after which you must switch control to another man. Normally, you can switch control at any time to preserve your entire platoon for later stages. Unfortunately, one encounter with a trip wire counts as four hits, and your man is gone. This would not be a problem, since you can jump over the wires. The problem is that the trip wires are placed randomly throughout the jungle, and sometimes they wind up directly in front of one of the up or down exits from the current screen. The trip wires disappear when you step on them, but I've found an easier solution. Just walk off the screen (either scrolling left or right or going up or down) and walk back again in the opposite direction and the wire will be gone. This is not very realistic. The program should not put a trip wire in front of an exit.

You complete Section 2 so quickly that it doesn't really require a separate name. You enter a village with about seven huts arranged in about as many screens that scroll left and right. Each hut has something in it: an enemy soldier, useful items, a trap door, "red herring" items or booby traps. Move your soldier left and right, avoiding trip wires and the enemy to make it in front of a hut. Push forward on the joystick to get into the hut (which reveals an invisible wall view) to see what's inside. You discover what an object is in the hut by pushing forward on the stick again while standing your man in front of the object. You are looking for a flashlight ("torch" in the manual), a map and a trap door into Section 3. There is no randomness in the placement of objects in the huts. After finding them the first time, you breeze through this section in 30 seconds. After Section 2 is completed, the screen blanks and the disk drive spins for about ten seconds, as it will between all other sections.

Section 3 (Tunnel Network) is my favorite of the game because, although you must follow a pattern to finish this part of the game, it still requires joystick skill to complete. There are three parts to the screen: 3D view of your location in the

*Continued on page 114*

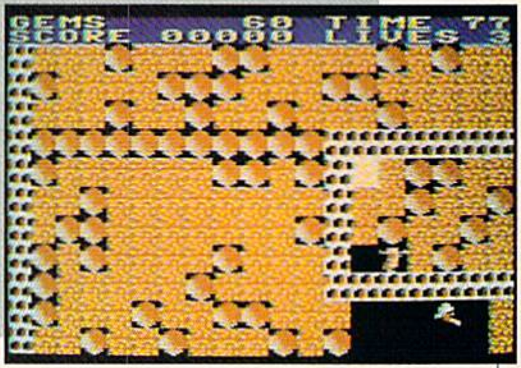

CINEMAWARE
PRESENTS
ROCKET RANGER
Only YOU can stop the Interplanetary Spread of Jet-Propelled NAZI FACISM!
A Master Race from Outer Space threatens the Fate of the Free World!
SEE THE BEAUTIFUL YOUNG DAUGHTER OF A FAMOUS SCIENTIST— HELD CAPTIVE BY A GANG OF GODLESS GOOSESTEPPERS!
Actual Amiga Screens

Reviewed by Mark Cotone

# Rockford: The Arcade Game

**Computer:** Commodore 64
**Publisher:** Arcadia/Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
**Medium:** Disk
**Price:** $19.99

Every step you take and every treasure you remove has an effect on the overall structure of the play field.




For those arcaders fortunate enough to have ever tackled any of the various *Boulder Dash* contests that have tunneled across our Commodore screens over the past five years, I've got some great news. Electronic Arts has just released the next chapter in this successful series entitled *Rockford: The Arcade Game,* and it is by far the most captivating, complex and challenging offering in the entire spelunking bunch. The tunnel mazes are a little tougher, the cerebral tests a little more involved, and the roaming creatures a little deadlier; all adding up to a contest that's a whole lot of fun.

On the other hand, for the relatives, spouses, friends and associates of these addicted *Boulder Dash* players, I'm afraid the news isn't nearly as good. I urge you to go to your arcade acquaintances as soon as possible and finalize decisions, settle problems and say your fond farewells. For as soon as the *Dash*aholics get their anxious little hands on this new offering, they'll waste no time delving deeper and deeper into its alluring far reaches. Chances are you won't see them for weeks, maybe months. Accept this fact and have pity. They cannot help themselves.

Before we go any further, in case there's a rare person or two new to the *Boulder Dash* phenomenon, let's quickly outline the basics of the game. You are Rockford, a hard-working fellow who was born to dig. With shovel firmly planted in hand, you aren't happy unless you're displacing dirt; burrowing down into the earth's bowels to search and explore. The neighbors think you're a bit peculiar, but you have your reasons, which we'll get to momentarily.

If you've ever seen one of those glass-sided ant farms that hobby stores advertise, then you'll have no trouble visualizing this contest's play field. It's as if someone has just taken a subterranean cross section and pressed it up against your monitor's picture tube. There's lots of dirt, a fair number of boulders and a few creepy crawlers all packed together to form a random network of tunnels that rise and fall as they stretch out across the underworld. To make things interesting, sprinkled among these familiar elements lay an assortment of prized riches. Gems, gold, coins and other valuable trinkets are generously scattered throughout the earth, patiently waiting to be harvested. Talk about rich soil! It becomes easier to understand your surrogate's eccentric digging desires. The object of Rockford—the miner and the game—is to enter each cave, excavate the required number of treasures from its strata, and exit before the limited allotment of time expires. Beat the deadline, and you'll receive point value for your collection, along with access to the next, more difficult level. But if you're tardy or careless, then one of Rockford's four lives will be wasted, and you'll be asked to try again.

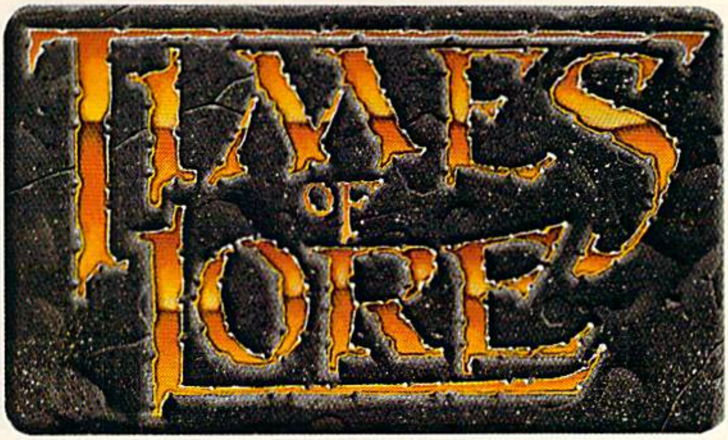
The secret to the past and continued success of the *Boulder Dash* series is that they all fit that arcade dream formula of simple to play and impossible to master. Within minutes one can easily pick up a joystick and start shoveling away like an old pro. But there are so many variables at work in each cave, and so many nuances to be factored in, that there's the potential for new puzzles and predicaments each time the game is played.

For example, let's take a look at Rockford's most obvious enemy: gravity. Rockford has two options for dirt removal. He can either plow through the earth with his body, leaving a newly formed tunnel in his wake, or he can extend his shovel out into any adjacent area and scoop the dirt aside. If you're up on your physics, you'll realize that in both cases, as your miner is working to remove soil, there's a good chance that any heavy object stationed above him will crash down and fill the vacated space. Every step you take and every treasure you remove has an effect on the overall structure of the play field. And each time you approach the same subterranean test with even a slightly different turn or twist, you are forming a unique tunnel course, as well as a unique video puzzle. Even one deviant step to the left or right can spell the difference between untold riches and a killer cave-in.

Now, as far as the dig, gather and escape principles are concerned, *Rockford: The Arcade Game* is very similar to its forerunners. And the size of the quest also meets expected dimensions, with the usual gargantuan 80-screen contest awaiting your shovel. But like its namesake, this game also forges forward; it builds on the *Boulder Dash* reputation by supplying a few ground-breaking additions of its own.

The most significant modification is a change in environment. Seasoned *Dash*ers are likely to check the package title to make sure they're playing the right game. These are not your traditional, everyday dirt and rock grottos. For the first time, the designers have allowed Rockford to don some brand new mining outfits, slipping him into some novel roles and settings. Five varied worlds await your surrogate, each presenting different surroundings, treasures and goals. You start your mission at the Caves of Craymar as Rockford the Hunter, exploring the Pharaoh's treasure store in search of sacred death masks. Next you're a cook collecting apples in the mazed Kitchens of Kyssandra, and then it's off in your cowboy gear to snatch Indian coins on a search for El Dorado. The fourth world takes you to deep space, where you'll be asked to gather stars from the heavens, and then you finally arrive back on earth for a stop at Frankenstein's Lab, where hearts must be

*Continued on page 110*




## Arcade adventure at its finest...

Fast-paced, exciting combat demands the use of all your wits and endurance to best a world teeming with assassins, wizards and monsters. Experience captivating graphics of an unprecedented calibre. Relentless opponents will hone your combat skills to a razor's edge. A simple yet powerful menu and icon interface provides effortless interaction with the world and its people, while the incredibly smooth animation presents a continuous panorama of action and adventure.




## Fantasy role-playing at its best!

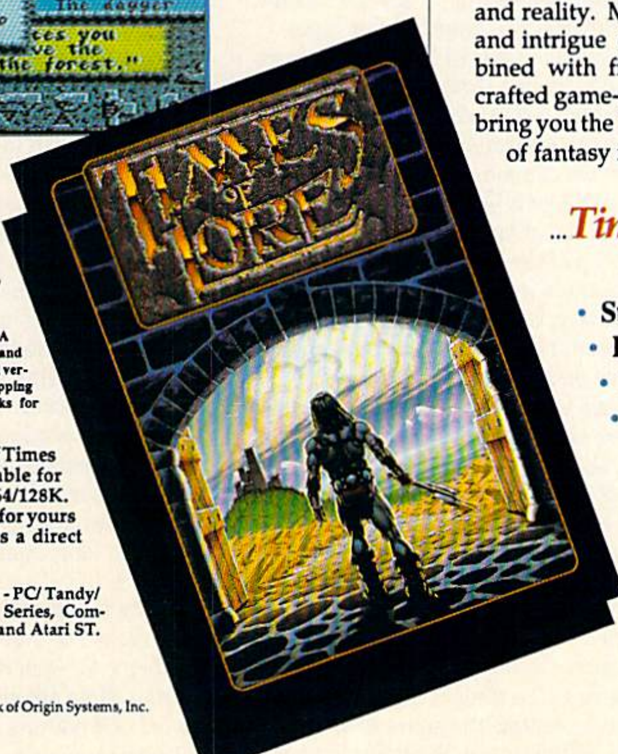
Astonishing realism is yours through scores of unique characters and sophisticated conversations. Immerse yourself in the sights and sounds of an ancient world embroiled in turmoil—the disappearance of the king and his young son —the struggle for control of the realm. The stakes are high; your role as the hero-for-hire requires all the courage and savvy you can muster. Your quest for truth will teach you much of the distinction between appearances and reality. Magic and intrigue combined with finely crafted game-play bring you the best of fantasy in...



Screens shown are for the Commodore.

*...Times of Lore*

- Stunning graphics and animation
- Fast-paced combat action
- Dynamic conversations
- Compelling plot




To get your copy of Times of Lore, either

1) visit your local retailer,

2) call 1-800-999-4939 8am to 5pm EST to order by VISA/MC, or

3) mail check (U.S. $) or VISA/MC#, cardholder name and expiration date to Origin. All versions $39.95 plus $2.50 shipping and handling. Allow 1-2 weeks for delivery.

Try it! A demo disk of Times of Lore is now available for the Commodore 64/128K. Send $2.50 to Origin for yours and credit it towards a direct order purchase.

Available for the IBM-PC/Tandy/compatibles, Apple II Series, Commodore 64/128, Amiga and Atari ST.

ORIGIN™

136-B Harvey Road,
Londonderry, NH 03053

Reviewed by Scott A. May

# Rastan

**Computer:** Commodore 64
**Publisher:** Taito Software, Inc.
267 West Esplanade
North Vancouver, B.C.,
Canada
**Medium:** Disk
**Price:** $34.95

They swoop out of the sky, crawl among the rocks and slither from cracks in the earth. There is nowhere to hide.




Let's face it. Arcade players—not just the games—are changing. A new breed of player has hit the scene: micro warriors with titanium nerves and laser-quick reflexes. It's downright embarrassing for those of us who still break out in a sweat battling *Space Invaders*.

The evolution of arcade players has brought drastic changes in electronic entertainment. Recent arcade games are not only better, they're bigger, faster and tougher.

Keep this in mind when you boot up *Rastan*, the mega-hit coin-op brought to the home screen by Taito. Don't expect sympathy when you've sunk to the depths of arcade frustration, lost in the hostile wilderness or stuck in an ancient castle. If you weren't so darn good, we wouldn't be in this mess.

The setting for *Rastan* is the distant land of Lograth. It is a time of powerful magic and constant turmoil. Creatures of unspeakable evil stalk innocent victims. They swoop out of the sky, crawl among the rocks and slither from cracks in the earth. There is nowhere to hide.

As Rastan, a powerful young warlord, you must seek out and destroy the source of corruption, the satanic Castle King. Your quest will take you through six realms of darkness, each more difficult than the last. Risk your life crossing deadly terrain, only to battle vast hordes of mutant beasts. Terminate the Castle King and restore Lograth to tranquility.

*Rastan* survives the trip from coin-op to home screen surprisingly intact. The only compromises made in its translation to the 64 result in fewer graphic embellishments and slightly stiff animation. Neither affects game play, however, and are soon forgotten once the action begins.

The slim instruction manual—apparently a Taito trademark—yields as little information as possible. Players are given strictly bare-bones material—joystick movement, a list of items to watch for, enemies to defeat and scoring. Obviously, the less you know, the more mysterious the game.

Regardless, Taito really needs to work on their instruction manuals. At best, most information presented in the guide is intentionally ambiguous. Taito should learn that user manuals are sacred cows not to be taken lightly.

Joystick controls are straightforward and easy to learn. The eight joystick positions permit *Rastan* to walk, jump or crouch in all four directions. Pressing the fire button causes him to use the current weapon (usually a sword, axe or mace). Pressing the button while jumping up results in a leaping thrust, useful for eliminating high-flying adversaries. Finally, Rastan can continue to swing his weapon even while climbing or falling. This technique is the *only* way to advance in many stages of the game.

The top of the screen displays your health status in the form of a bar graph. Next to that is a beating heart. Not a cute Valentine's heart, mind you, but a pumping blue and red vascular organ with veins and everything. As the health bar becomes shorter, your heart visibly beats faster, slowing your reaction time. It's enough to make a warrior hang up his sword and take up farming.

Just when it appears this game doesn't cut the player any slack, we stumble upon the extended play feature. Although you are given only four lives at the beginning of the game, losing your final life doesn't spell defeat. The designers graciously allow you to resume the game where you left off, with four new lives. Surprisingly, this option is offered not once, but *three* times during the game. Even after exhausting every chance, the worst you must face is starting over from the beginning of the current level.

Your enemies in the game are widely varied and relentlessly aggressive. They range from commonplace—snakes, bats, insects and fish—to nightmarish—many-armed bugs, winged men, Chimeras, Gigas, serpent ladies, wizards and skeletons. Each inflicts different amounts of damage to your character and must be disposed of swiftly, yet carefully. Most simply walk up to you and are easy targets. Others strike and retreat quickly, often firing weapons from a safe distance. To survive, you must keep moving, always taking the offensive.

The game offers a wide variety of scrolling backgrounds, each totally interactive with your character. The physical challenges never seem to end: lava pits, tunnels, lakes, rivers, ledges and swamps, to name a few. And that's only in the wilderness. Enter one of the many castles and prepare for even greater terrors.

*Rastan* features nicely-textured graphics mostly rendered in dark shades of red, blue and gray. The title character is well defined with fairly fluid animation. A few of the other creatures, however, offer little detail and choppy movements. Sprite breakup appears to be a common problem whenever four or five characters converge on the screen. It's slightly annoying, but it never lasts long enough to detract from the action.

Finally, the game has one of the loudest soundtracks I've ever heard, featuring a new theme for each realm. Some are quite amazing while others (Realm One comes to mind) are nothing short of pure torture.

*Rastan* may not be Taito's most polished work, but it may well be their most challenging. This is a huge game packed with challenge, frustration and reward. I guess that's what quests are all about. ■

by Edith Chasen

# Computer Study Guide for the SAT

**Computer:** Commodore 64
**Publisher:** Simon & Schuster
One Gulf + Western Plaza
New York, NY 10023
**Medium:** Disk
**Price:** $29.95

Simon & Schuster's *Computer Study Guide for the SAT* is as close as you can get to the real exam without actually being in the classroom. It is not only a study guide, but also a test simulator, complete with real-time clock for each SAT section. You may be thinking, "Why should I buy an SAT program when I can just buy the usual book of practice questions?" An important reason is that this program does much more than just provide practice. It tracks your progress automatically in each section of the SAT, letting you know which areas need more study emphasis. It helps you by providing on-screen explanations of the correct answers, so you don't have to waste precious study time hunting through books. There are two complete SAT exams on the disks with a particularly good mix of questions in each category. The result is to make your studying easier and you more confident about achieving a high test score.

The package includes two "flippy" disks. One disk contains the exams; the other extra practice problems. Neither are copy protected. You are urged to make backups, especially if two or more students will be sharing the software. You'll also need a blank disk to keep track of your scores.

This program lets you concentrate on studying for the SAT, not setting up your computer. For example, if you start running the software and have forgotten to format your scoring disk, you can do it from within the program. If at any time you have the wrong disk in the drive, a sentence appears on screen specifying which disk belongs there.

The directions are very simple to follow, and you don't have to memorize any commands, as they all remain on the screen. If you should get confused, the manual contains a one-page summary of the commands. All commands are accessed with one or two keystrokes, so you don't have to be familiar with the whole keyboard. The light green writing on a black background is pleasant to look at and easy on the eyes, an important feature for a text program. Split screens present the questions and associated information on the left, with the commands and remaining number of questions and time on the right. You might expect the 40-column screen to be cluttered and unreadable with all this information on it, but surprisingly enough, it isn't. The text is well laid out and uncrowded.

> The program tracks your progress automatically in each section of the SAT, letting you know which areas need more study emphasis.

When you are ready to begin the exam, you can choose which section to take first. Each is timed for 30 minutes, as in the real exam. A handy on-screen scratch pad is accessed by pressing the F5 key, which you can use to take notes as you answer the questions. If you finish before your time is up, you can go back and check your answers. A beep will sound at five- and one-minute warnings as you approach the end of the allotted time.

After you complete each section, you can either proceed to another or immediately get your score. You can choose to work on any questions you got wrong or go straight to the next section. This is a breath of fresh air, for there are so many programs that just give you the answer and leave the process of obtaining it up to your imagination. All pertinent English or math rules are displayed with the correct answer. I especially like the way the numbers in the vertical math problems line up in their correct columns. In order to resolve the problem of screen distortion, symmetrical figures such as squares are clearly labelled. As your raw scores are displayed, you can also view graphs of your scaled scores, to keep track of your progress as you study. The scaled scores give you an indication of what your final score would be if this had been the real test.

The practice disk is a computerized version of *Lovejoy's Preparation for the SAT.* This disk contains a calculator, which does simple multiplication, division, addition and subtraction. It does not handle exponents. Still, you'll be pleased with how handy it is and how simple it is to use.

There are practice questions on 27 different topics in English and math. Help screens are available by pressing F1, displaying the particular rule of grammar or math on the screen that directly affects the problem you are working on. You can practice one topic many times in a row, or move on to another as you like. The software automatically saves the amount of times you practiced a certain topic and your score each time, so you see your improvement. It even saves your most recent set of answers, so you can go back at a later time to check your work.

The manual is much more than just an instruction book. It is a well-written guide to not only the software, but also to the real SAT. It is evident that much thought was given to its content. Starting with an explanation of how the SAT test is organized, it then covers what you can expect as you walk into the classroom for the first time. The method of scaling scores is explained, along with tips on how to interpret your individual scores.

> For any question that you got wrong, the program will show you how to arrive at the right answer.

Then follows a clear and concise explanation of how to move around within the different testing modules on both disks. After the commands are explained, the rest of the manual contains everything from test-taking and studying hints to rules of math and grammar. Here you will find features such as special strategies and supplementary reading lists for each SAT topic. There are even hints on how to go about guessing the best answer and when to do it! Definitions and examples of items that are often confused, as well as suggestions for figuring out the best answer, are provided. Additional chapters cover verbal rules, such as the usage of prefixes, roots and suffixes. Testing tips include everything from finding a comfortable seat in the classroom to handling an occurrence in the room that may break

*Continued on page 117*

CompuServe Now Available at Radio Shack



# Make Amigos With Other Amigas.

The largest group of Amiga® users in the world shares its problems and solutions online every day in CompuServe's Amiga Forums. And you can join them.

Whether you're an Amiga novice or a professional user in broadcasting, film special effects, animation, or music production, you'll find support from thousands of Amiga users and nearly every third-party Amiga software and hardware vendor.

Looking for a solid CAD program? Want to make the most of your Amiga's multitasking capabilities? Ask somebody who's been through it all. There's no better way to get more out of your Amiga.

To join CompuServe, see your computer dealer. To order direct or for more information, call 800 848-8199. In Ohio and Canada, call 614 457-0802. If you're already a member, type GO AMIGA at any ! prompt.

**CompuServe®**

An H&R Block Company


FOR COMMODORE 64® AND 128™ OWNERS
FREE AND EASY
Here are the hits you want. At discount prices. Easy to order, by phone or mail. And for every one you buy, you get one FREE from the software at the right. Order today!
Platoon Data East HC-1696 $24.95
Rampage Activision HC-1716 $29.95
California Games Epyx HC-1841 $34.95
Chop 'n Drop Activision HC-1228 $24.95
Might & Magic II New World Computing HC-1243 $34.95
X-15 Alpha Mission Absolute Entertainment HC-1786 $24.95
The Three Stooges Cinemaware HC-1238 $29.95
Ocean Ranger Activision HC-1714 $29.95
Championship Football Gamestar HC-LEAG $29.95
Rastan Taito HC-1254 $29.95
The Games: Summer Ed. Epyx HC-1218 $34.95
Rack 'Em Accolade HC-1250 $24.95
Shanghai Activision HC-LAAB $24.95
Out Run SEGA HC-1251 $29.95
Video Vegas Baudville HC-1240 $24.95
Dive Bomber Epyx HC-1679 $34.95
Corruption Rainbird HC-1737 $34.95
Neuromancer Interplay HC-1788 $34.95
Battletech Infocom HC-1229 $34.95
Maniac Mansion Lucasfilm Games HC-LABP $29.95
Ultima V Origin Systems HC-1248 $49.95
Rocket Ranger Cinemaware HC-1236 $29.95
Zak McKracken Lucasfilm Games HC-1778 $29.95
Space Harrier SEGA HC-1252 $29.95
The Last Ninja Activision HC-LABQ $29.95
geoPublish Berkeley Softworks HC-1245 $38.95
Guerrilla War Data East HC-1687 $24.95
Crossbow Absolute Entertainment HC-1785 $24.95
Order by phone. Call toll free 800-227-6900


THIS SOFTWARE IS FREE!
Air Rally
Activision
HC-85027 FREE!
Murder on Mississippi
Activision
HC-85032 FREE!
Top Fuel
Gamestar
HC-85028 FREE!
Hollywood Hijinx
Infocom
HC-ZLAB FREE!
Tag Team Wrestling
Data East
HC-85031 FREE!
Graphics Scrapbook
Epyx
HC-85061 FREE!
Infocomics
Infocom
HC-85034 FREE!
Knight Orc
Rainbird
HC-85037 FREE!
Geos 2.0
Berkeley Softworks
HC-1244 $49.95
Football/Baseball
Gamestar
HC-85030 FREE!
Tass Times
Activision
HC-ZABC FREE!
Plundered Hearts
Infocom
HC-85044 FREE!
geoSpell
Berkeley Softworks
HC-85029 FREE!
Borrowed Time
Activision
HC-ZLAK FREE!
Pharaoh's Revenge
Publishing International
HC-1234 $24.95
Zork II
Infocom
HC-85035 FREE!
Mindshadow
Activision
HC-85033 FREE!
Jinxter
Rainbird
HC-85036 FREE!
Font Pack 1
Berkeley Softworks
HC-85026 FREE!
Moonmist
Infocom
HC-ZLAR FREE!
Victory Road
Data East
HC-1694 $24.95
F-18 Hornet
Absolute Entertainment
HC-1782 $29.95
BUY 1, GET 1 FREE
Yes! Please rush my software order. I understand that I get one free from the selection above for every one that I buy. If I buy 4, I'll get an extra bonus title free!
NAME
ADDRESS
CITY
STATE
ZIP
May we please have your daytime phone number in case we have a question about your order:
AREA CODE
ITEM NUMBER
TITLE
PRICE
ENTER 1 FREE ITEM NUMBER FOR EACH TITLE PURCHASED
METHOD OF PAYMENT
Check or Money Order Enclosed. Payable to Triton Products Company.
C.O.D. (C.O.D.'s are subject to a $2.50 C.O.D. Charge)
MASTERCARD
VISA
AMER. EXP.
Credit Card Number:
SUBTOTAL
For orders shipped to CA add 6% sales tax. For TX add 7½% sales tax.
SHIPPING CHARGES 4.50
Add $2.50 C.O.D. charge for COD's.
TOTAL
ENTER EXTRA BONUS IF YOU PURCHASE 4!
Exp. Date
Month
Year
Signature (required for all credit card orders)
Please send me your free catalog. Commodore 64 and 128
Not valid with other offers. Canadian orders add 15%.
ORDER BY PHONE
CALL TOLL FREE
800-227-6900
Mon.-Fri. 6AM to 6PM
Sat. 9AM to 4PM Pacific Time
OR MAIL ORDER TO:
Triton Products Company
Buy 1, Get 1 Free
P.O. Box 8123
San Francisco, CA 94128
TRITON

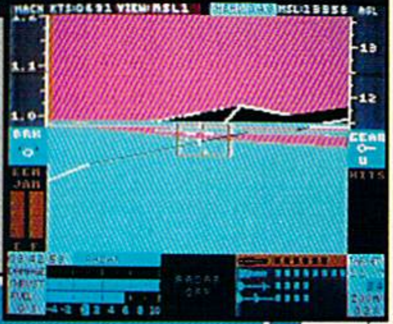
Reviewed by Jeffery Scott Hall

# Stealth Mission

**Computer:** Commodore 64
**Publisher:** SubLogic Corporation
713 Edgebrook Drive
Champaign, IL 61820
**Medium:** Disk
**Price:** $49.95









When both targets are locked into the tracking computer, grasp tightly on the control stick while releasing all four of your sidewinders.

*Stealth Mission* from SubLogic, puts you (as pilot) in the heat of combat using a variety of aircraft and scenery. You begin by choosing the missions menu or loading a scenery disk of your choice. You can choose from four missions: Mountain Conflict, Battle at Sea, Ancient Ruins and Marathon Bomber. Each mission allows you to choose an easy or hard version of combat. Next you select one of three jets: F-19 stealth fighter, X-29 Experimental or the F-14 Tomcat. Equip your jet with various bombs and missiles from the armament menu. Now, let's take a flight right into the heat of combat.

## Flying into Battle

Your view is that of a pilot sitting inside the jet staring out of the canopy. Just below you are indicators and gauges, including a targeting crosshair. Taking off for a routine training assignment, you receive an urgent message from the flight control tower. You are told that boggies have been sighted in a nearby area, and guess who gets to go in and clean up the skies?

Responding to their message, you increase thrust to full capacity, for there is little time to spare. As you close in, reach down and turn on the target-tracking computer. A few minutes later, you notice two blimps closing in fast on the radar. You decrease your speed and arm the sidewinder missiles, hoping that you catch them off guard. No such luck, for your warning indicators are emitting that buzzing which you know so well. Reacting quickly you dispense a flare, activate the jammer and take evasive maneuvers. Suddenly, you see a large explosion behind you and realize that the missile is gone. Using your jet fighting skills you manage to pull both targets within range. When both are locked into the tracking computer, grasp tightly on the control stick while releasing all four of your sidewinders. You score a direct hit on both enemy planes, but wait, there's another jet.

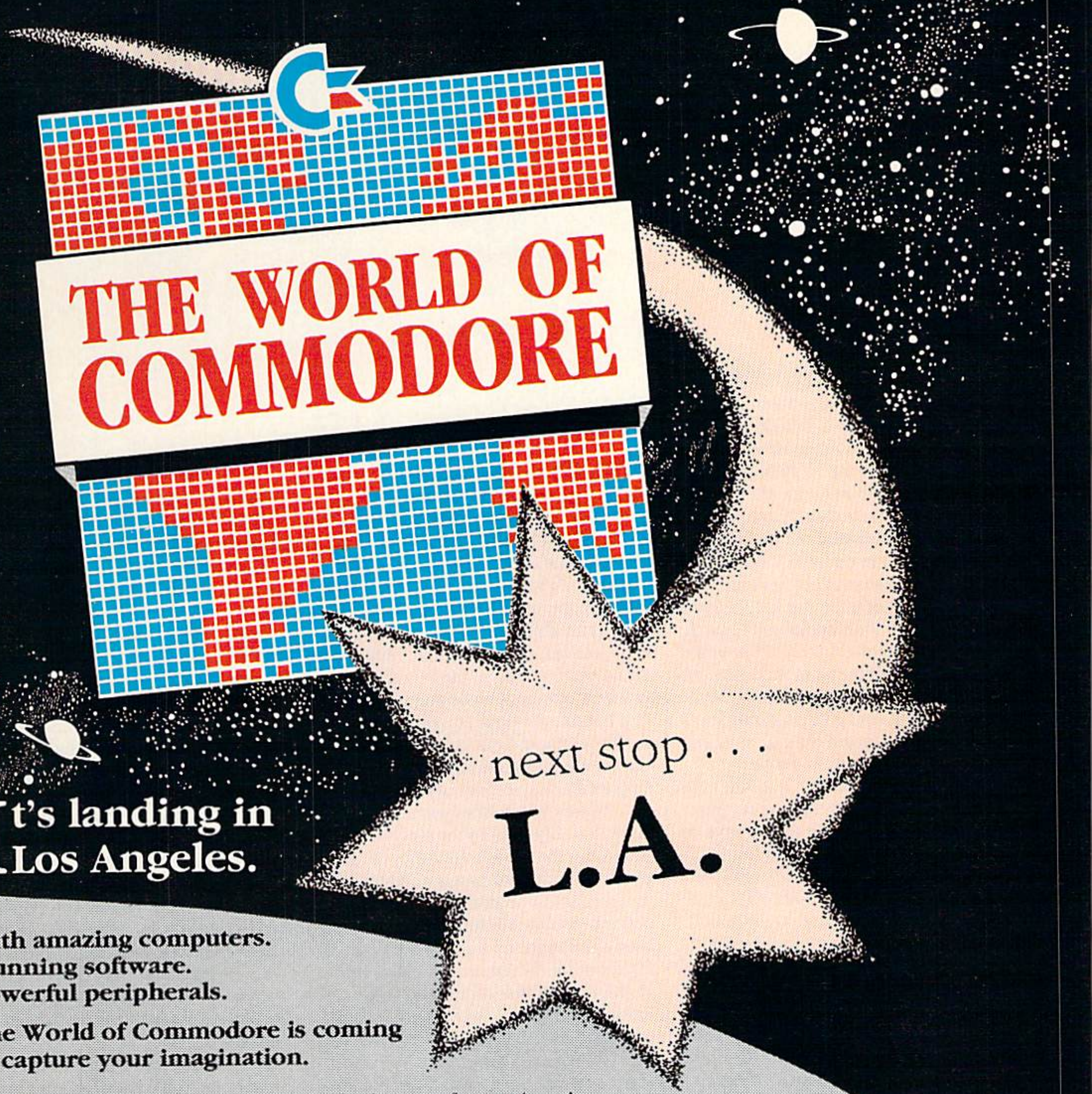
It's too late to take any action, as you notice an explosion on your left wing! All weapons have been destroyed except for one missile hanging from your right wing. Knowing this is your only chance for survival, you quickly lower your altitude so that his plane is directly above yours. Trying to find you in the clouds, the enemy plane starts lowering its altitude and decreasing thrust. Now is your chance—you increase thrust to maximum and select the last remaining missile. As you go pull up to increase the altitude to match his, your target-tracking computer confirms a lock-on. Gripping tight, you squeeze the trigger launching the missile. Bingo! A direct hit to the front of the plane! Having completed your mission you return back to base for repairs, only to find out your mission has just begun.

## Summary

*Stealth Mission* is unique in that it provides you with three different kinds of jets, each with different handling and appearance. As with all flight simulators from SubLogic, *Stealth Mission* allows you to use any of their scenery disks. This includes the new scenery disk Western European Tour, which I found to be the most enjoyable scenery disk to date. *Stealth Mission* combines both action and strategy for a combination which is truly superior to others. Only a flight simulation this good could come from SubLogic.

## Hints for Flying

- If you start to run low on air-to-air missiles you should switch to cannons. The cannons work well against enemy fighter jets, but do not work well on ground targets.
- As soon as you have target lock-on, fire your missile. Waiting a split second could mean the difference between a hit and a miss. When firing at ground targets make sure you are directly over your target, unless you are using stealth air-to-ground bombs.
- When your warning indicators go off from a S.A.M. launch, immediately hit the jammers. If the jammers are damaged, try to out-maneuver them by doing some aerial stunts (which are described in the manual).




# It's landing in Los Angeles.

**With amazing computers.**
**Stunning software.**
**Powerful peripherals.**

**The World of Commodore is coming to capture your imagination.**

It's the computer show for beginners and hackers, professionals and students, business people and home users.

Commodore Business Machines and many other exhibitors will display and sell the **AMIGA, C-64, C-128, PC** computers, a galaxy of software for **Commodore** and **AMIGA** computers and a glittering constellation of printers, disk drives and desktop publishing equipment. You will find peripherals and accessories for all your present and future equipment. It's computer heaven.

Stage demonstrations and provocative seminars, presented by top experts, are included with your admission.

Three days of bargains, selection, information, excitement and prizes.

See it all with your own eyes. Try it all with your own hands. At the World of Commodore in Los Angeles.

**May 19, 20 & 21, 1989 L.A. Convention Center**

**Adults $10  Students & Seniors $8**  Seminars and stage demonstrations are included with admission.

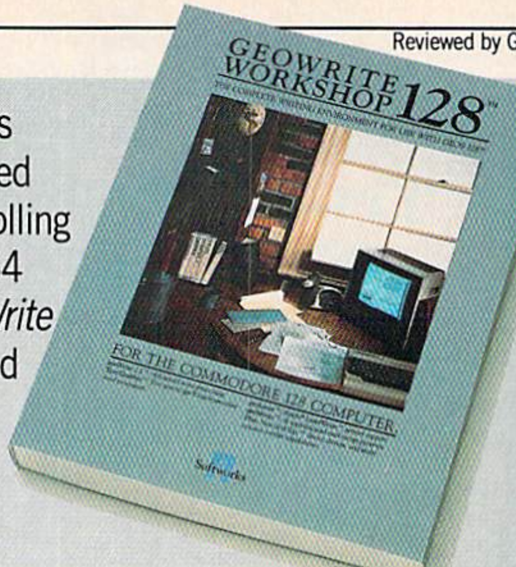
Exhibitors contact: The Hunter Group (416) 595-5906  Fax: (416) 595-5093  Produced in association with Commodore Business Machines

Reviewed by Gary V. Fields

# geoWrite Workshop 128

**Computer:** Commodore 128
**Company:** Berkeley Softworks
2150 Shattuck Ave.
Berkeley, CA 94704
**Medium:** Disk
**Price:** $69.95

Anyone who has been discouraged by the slow-scrolling feature of the 64 version of *geoWrite* will be delighted with the improved speed found here.




*GeoWrite Workshop 128* is Berkeley Softworks' offering to those 128 users needing a good, fast, icon-driven word processor. Because of the similarity of the names, some users may confuse *geoWrite Workshop 128* with *geoWrite* which comes on the GEOS system disk, but there is a great difference between the two. While both have much in common, *geoWrite Workshop 128* has more features and more power—where the system word processor ends, *geoWrite Workshop* begins. It has most of the features any writer would look for in a word processor including cut, copy, paste, replace, search, footers, headers, page break, and goto page, and because it operates inside the GEOS' environment it is very easy to master.

This new word processor is so similar in appearance to *geoWrite,* anyone familiar with that earlier program should have no trouble mastering *geoWrite Workshop.* The work area is almost identical to the original word processor except for a couple of details like a new option in the pull-down menu called page and one screen line which is reserved for justification and line spacing selection. By clicking on a box in this line, you can have text justified left, center, right or full and lines of text either single, 1½ or double spaced. Margins are selected by clicking on a right and left "M" and sliding them to the desired location. *GeoWrite Workshop* supports individual paragraph formatting, automatic paragraph indentation, and standard font styles (bold, italic, outline, etc.) it also supports superscript and subscript. But what pleased me most was that the program includes customized headers and footers, including page numbering. And if you set the time and date with the preference manager, you can have that information stamped in your headers or footers too.

If you are like me, you prefer your correspondence to include a personal, visual touch (I hate plain text letters). To satisfy that need, *geoWrite Workshop* allows the writer to incorporate both text and graphic images in a header. Thus, if you want your personal or business logo to appear at the top of every page, you can do it with this word processor instead of having to pay a print shop to print special stationery. Another advantage to this approach is that you can change the logo any time you want by simply switching graphics. And because the program comes with a healthy choice of fonts (and there are dozens if not hundreds of GEOS-compatible fonts available), you can customize your text not only to say what you mean but also to visually reflect your sentiments.

Because the 128 is a fast eight-bit computer with plenty of memory and an 80-column display window, *geoWrite 128* is powerful *and* fleet footed. Anyone who has been discouraged by the slow-scrolling feature of the 64 version of *geoWrite* will be delighted with the improved speed found here. *GeoWrite Workshop* also supports expanded memory as well as the faster 1571 and 1581 disk drives. Probably only those who began with GEOS 64 and the 1541 disk drive can really appreciate the value of RAM and fast drive support. For instance, with *geoWrite Workshop* on a 1571 drive you can move from option to option almost instantly, plus a double-sided disk reserves a whopping 190K of storage space with all the fonts and printer drivers in tact. If you are lucky enough to have both a 1750 RAM expansion unit and a 1581 drive, the system's speed and power may not make your head spin, but it will almost seem like you have moved from an eight- to a 16-bit system.

The real strength of *geoWrite* is its ability to include both graphics and text on a page. Thus, what you see on the screen is exactly what you will get when the file is dumped to your printer. But that great display also has a down side—graphics slow the program's scrolling function. I timed a full-page scroll (top to bottom using the cursor keys), first with two small graphics included and then again with the images hidden. With the graphics showing, using a 1571 disk drive and only the 128's native memory bank, the scroll took a full 29 seconds. The same task with the images hidden took exactly half the time. But the fastest way to move through a page is to activate the "page indicator" icon and move the viewing block in the indicator to the area on the page you want to view. Using this method of scrolling, moving from the top of the page to the bottom took only two seconds. I've emphasized the speed gain in this GEOS product because the lack of speed has always been my major complaint with the GEOS environment. This product takes full advantage of the 128's power, potential and best of all—speed.

After you've become comfortable with the program, you'll probably want to wait until the last minute to add graphics to save disk space and editing time. But until then, *geoWrite* offers a compromise solution: load the images into the document, view them and then hide them while you're adding or editing text. This is done by accessing the options menu and toggling the hide/show pictures option off or on. When the images are hidden, a gray box the exact dimensions of the hidden image reserves the position. This scheme gives you a good idea of how the final page will appear without penalizing you with slow editing action.

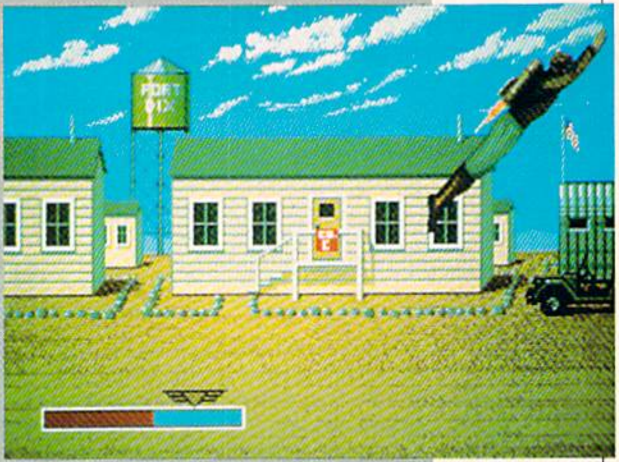
*Continued on page 103*

Reviewed by Jeffery Scott Hall

# Rocket Ranger

**Computer:** Amiga
**Publisher:** Cinemaware Corporation
4165 Thousand Oaks Blvd.
Westlake Village, CA 91362
**Price:** $49.95

It is May, 1940 and Adolf Hitler's Nazi empire is spreading across the global continent killing anyone in its path. You are a U.S. scientists working at Fort Dix who must stop Hitler before he accomplishes world domination. In your laboratory you stare out the window and think about radiation bombs to invent. You notice a brilliant light from a room across the hall. Approaching the door, you notice the light is gone. You open the door and stop to stare in absolute amazement at what you see.




Now, Superman makes taking off look easy, but it will take you several tries to get up to speed.

## Chapter 1: Christmas Comes Early

Inside the room you find a large container which was not there before. You pull yourself together, grab a nearby tool and pry it open. Inside the container are five neatly packed objects, and on top you find a book that begins, "One hundred years ago in 1940 the Nazis won World War II. It was a mistake in time, and only you can save us."

The page is dated December 28, 2040. After reading the book, you realize that you've been given the chance to change history and the fate of billions rests in your hands. You empty the container to reveal a Rocket Pack, Ray Gun, Wrist Computer, Secret Decoder Wheel and a designer space suit. Caught up in what has happened to you in the past few hours, you notice a loud humming . . . a Nazi Zeppelin!

## Chapter 2: The Abduction

*Rocket Ranger* is non-stop action from the very beginning, when a Nazi zeppelin lands in Washington, D.C., and kidnaps America's top scientist and his beautiful daughter. Your first mission is to intercept the zeppelin as it crosses the Atlantic with the hostages. You quickly shoulder your rocket pack, strap on the ray gun and sprint to the main street of Fort Dix. After dialing up the correct amount of rocket fuel on the Secret Decoder Wheel (the game's only form of copy protection), you prepare for your first flight.

Now, Superman makes taking off look easy, but it will take you several tries to get up to speed. After a successful takeoff you will see yourself flying right off the screen, then a map of the world will appear to mark your flight path. If you are successful in catching the zeppelin, prepare to do battle with your ray gun while traversing the Atlantic. The goal is to take out all the Nazi gunners while protecting yourself from enemy fire and, of course, rescuing the prisoners.

If your aim is not careful you'll find out that zeppelins are highly explosive. Since this is your first shot at being a hero, you will be given an extra chance if the zeppelin explodes. The prisoners will parachute from the zeppelin right into a waiting Nazi submarine which will take them to Germany. Later in the game you will be given a second chance.

## Chapter 3: Nazi Terror Continues; Lunarium Runs Low

Once you've arrived at your destination and completed your goal, you will be faced with two choices: Pick Destination or Send S.O.S. If you took enough fuel with you on your trip, you will be able to either fly back to base or to another part of the world. To help keep you informed on the status of the Nazi empire around the world, five agents have been placed at your command for you to position in strategic global areas. When the agents have something to report, a graphic symbol representing an agent will blink on the map. The agent will report any intelligence gained in the area. This will help you find areas of the Nazi empire vital to your mission.

To survive you must maintain a plentiful supply of lunarium. Lunarium is an extremely powerful tool; you can either use it for rocket fuel or to make bombs. Without it, you will quickly find yourself with an inoperable rocket pack which means that you lose the game. To obtain new supplies you must either organize a resistance at the fuel base or raid the base yourself. Raiding the base yourself is much quicker, but also more dangerous, since it is guarded by particle-beam weapons. If you choose to go in, you will find yourself behind enemy lines for an intense fire fight to see who will get the lunarium. You must use your ray gun to take out all the particle-beam bunkers before you can advance to claim your prize.

## Chapter 4: The Ultimate Goal

To complete the game you must rescue the scientist and his beautiful daughter and build a rocket ship to take you to the moon. You will find all the necessary parts for rocket construction in different areas of the world, so use your agents to figure out where they're located. Most of the rocket lab bases will be guarded by enemy soldiers. To obtain the rocket part you must overpower the guard by going head-to-head in the boxing match of your life. Once you have obtained all the rocket parts it will be your job to fly to the moon

*Continued on page 111*

Reviewed by Russ Ceccola

# Shadowgate

**Computer:** Amiga
**Publisher:** Mindscape, Inc.
3444 Dundee Road
Northbrook, IL 60062
**Price:** $49.95

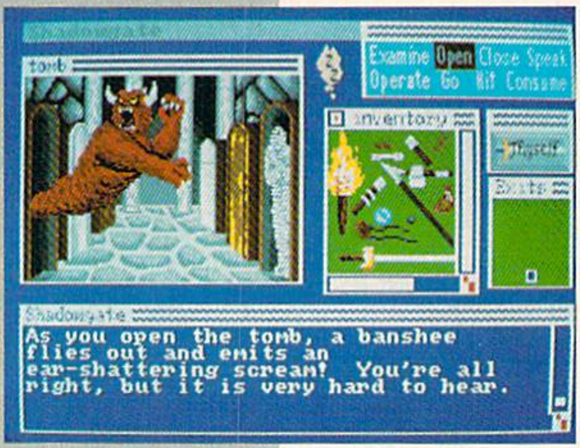
How many of you people out there like horror and fantasy movies? Okay, raise your hands. Good. Now, how many would like to be in a horror movie or fantasy movie? Great—even better. Well, you may just feel that way after finishing *Shadowgate* from Mindscape, a moderately difficult adventure game. Designed by ICOM Simulations, Inc., *Shadowgate* is similar to their other releases—*Deja Vu* and *Uninvited.* In fact, *Shadowgate* closely mirrors *Uninvited* in that you are exploring a fortress containing evil presences, and the game has horror overtones (but a base in fantasy). *Uninvited* is a classic haunted house game, not leaving much to be desired. *Shadowgate* is, however, a strange excursion into the depths of what was once an ordinary castle.

In *Shadowgate* you are the last of a ancient line of kings, with a very immediate goal in mind. You must defeat the Warlock Lord who occupies the shining fortress *Shadowgate,* who has turned the land from bright and free to dark and oppressive. The Warlock Lord's ultimate goal is to raise the titan Behemoth and destroy the land. You must stop him and save the land from the devastation that is promised.

The goal isn't easy, but executing commands in *Shadowgate* is. This is because of the unique game system incorporated in all ICOM games. Playing each game involves moving the mouse pointer around the screen and clicking the button on pictures in the main window, items in your inventory, an icon that represents your game self and an Exits window. Because the game is entirely mouse controlled and requires no text input (except for entering a single word later in the game), it is easy to physically play the game, but not easy to win.

The bulk of the game interface relies on the use of a menu in the upper-right corner with eight commands: Examine, Open, Close, Operate, Go, Hit and Consume. Even without reading the manual, which is well written but short, you can probably figure out what each of the commands does. What is unique about these commands is that, in order to execute them, the object(s) of the command must be clicked on in either the main picture window or the inventory. As a result, there are many ways of doing things in *Shadowgate.*

*Shadowgate* is a strange excursion into the depths of what was once an ordinary castle.




For example, when you start the game, you are standing in front of a door. There are many ways to open the door. The easiest way (requiring no commands) is to simply double click on the door in the picture. You can also double click the square in the Exits window, which places a square at each direction where there is an exit from the current room. Or you can single click on either the door or the square in the Exit window and then click on the command Open. It won't take long to gain an understanding of the commands. You just have to think about clicking things in a command-object order.

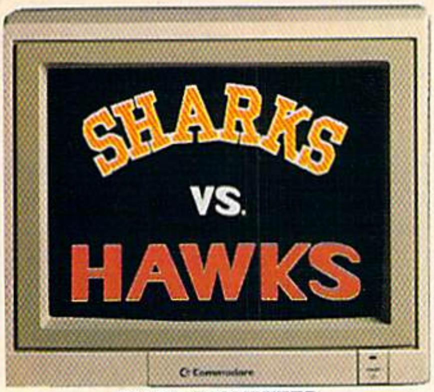
Clicking Examine and then an object in the Inventory window or picture window will give a description. Clicking Open and then the thing you want to open does that job. Close works the same way. Clicking Speak and then the person you wish to speak to will allow you to converse with other characters. Clicking Go and then an exit will allow you to go through an exit. Not all exits are seen in the picture screen, so this command sometimes must take the place of a double click maneuver. Clicking Hit and then an object performs this sometimes dangerous function. Clicking Consume and then food or drink, potion or vial, will allow you to use those things. Finally, using Operate requires three clicks: one for the thing or person to do the operating, one for the command and one for the object of the operation. For example, you would click once on yourself, then on Operate and finally on a lever in the picture window to move the lever. In the same way, you could unlock a door with a key using the Operate command.

The only other thing you need to know about the interface is that there are windows for inventory, pictures and text descriptions and an icon that represents you. You use this icon when you are the object or originator of an action. The windows I just mentioned can be moved all around the screen to wherever you want, as can other windows that occasionally pop up. If it looks familiar, it's because *Shadowgate* was originally designed on the Macintosh and ICOM has kept the interface intact in the translation.

A very important menu is called up when you press the right mouse button—the save menu. The choices here are: New (start a new game), Open (to restore a previously saved game), Save (to save a game), Save As (to save with a new name) and Quit. Needless to say, you must save games onto a blank disk often to finish *Shadowgate* successfully. Unfortunately, I found myself making many, many saves because of some of the difficult situations in the game. Remember—don't be brave and foolish, save your game often and avoid having to replay the whole game again after getting killed.

The most important piece of advice I can give you in playing *Shadowgate* is to always have an extra torch or two on hand. They are easy to get in the game, but go out after only a few turns. Keeping them in reserve saves your tail in the difficult situations you will most certainly encounter. I found this to be an annoying factor in the game. *Zork I* best handled the factor of keeping a dark place lit up to

*Continued on page 118*



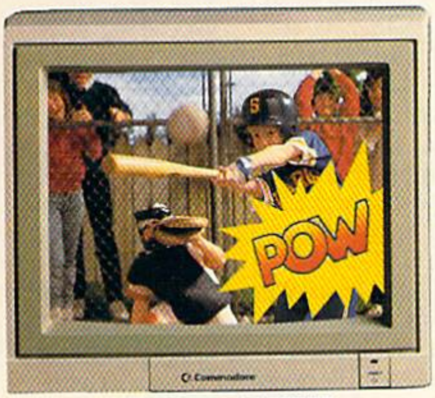

FADE IN COMPUTER-GENERATED TEAM LOGOS.



CHECKERBOARD WIPE REVEALS STAR PLAYER.



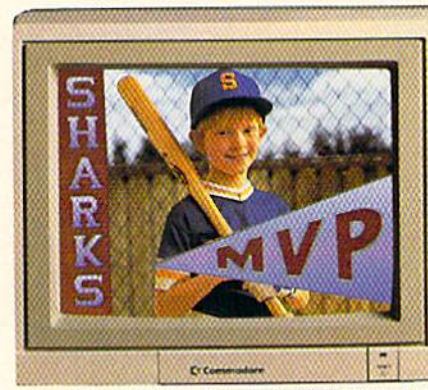

SUPERIMPOSED TITLES DISPLAY STATISTICS.




COMIC BOOK EFFECT POPS ONTO SCREEN.




ANIMATED BASEBALL FLIES TOWARD VIEWER.

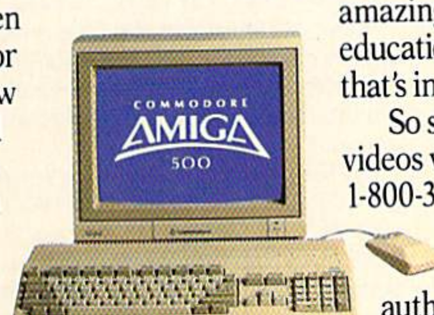



DISSOLVE TO TEAM LOGO AND PENNANT OVER FREEZE FRAME. FADE TO BLACK.

# Bring Your Home Videos Into The Big Leagues With The Commodore Amiga 500.

Team up your video system with the Commodore® Amiga 500 home computer, and you've got professional video production power.

The Amiga® has already been used to create special effects for network TV programs. And now you can use its 4096 colors and powerful graphics software to generate 3-D titles...animation —even sophisticated wipes, fades and dissolves. Then superimpose them onto your videos with an optional genlock device.




But the Amiga 500 gives you much more than video production power. It's a complete home office productivity computer. It plays amazing arcade games. It makes education more fun. All at a price that's in anyone's ballpark.

So step up to big league home videos with the Amiga 500. Call 1-800-343-3000, ext. 300, for more information and the name of your nearest authorized dealer.

## Only Amiga Makes It Possible.

Reviewed by Gary V. Fields

# PHASAR:

## *Professional Home Accounting System and Register*

**Computer:** Amiga
**Company:** Antic Software
544 Second Street
San Francisco, CA 94107
**Price:** $89.95

*PHASAR* stands for "Professional Home Accounting System and Register." As the title suggests, this is not a package to reach for if you are looking for light entertainment. Instead this is a heavy-duty, financial aid which lets you keep track of where your money is going, assists you in planning your fiscal future and can help you get a realistic grasp on your present monetary status.

The program is divided into six modules accessed through a pull-down window: project, transaction, reports, analysis, setup and lists. The project, setup and list options are used primarily for setting up and maintaining the program; while transaction, reports and analysis are where most of *PHASAR*'s serious work is done. Transaction lets you enter and edit financial information. To make understanding and using *PHASAR* easier, the system disk comes with several sample transactions which match those discussed in the tutorial section of the manual. I found the quickest way to enter my own financial numbers and accounts was to customize and add to these tutorials.

Transactions are handled through a split-screen format where the program presents a list of the defined accounts at the top and lets you select and enter new transactions using the lower screen. As you enter information about cash, credit and checking transactions, the data is stored to disk and your account balance is updated to reflect the changes. Recognizing that very few of us get a real kick out of duplicating row after row of numbers, dates and account information, *PHASAR*'s creator Tom Marks designed a program which minimizes keyboard activity by making intuitive decisions for you. This means you can enter data using "shorthand." For instance, if while entering data you skip past the date entry of a transaction, the program will assume you will accept the present date and will automatically enter it for you.

> *PHASAR* has both the power and features required to put your home or business finances in order.

The same friendly entry scheme works with most of the categories. If you just enter a couple of letters in a field, the program will attempt to finish the entry for you. For instance, if you are entering a new transaction and you have "Sears" defined as one of your accounts, you can simply type "se" and the program will finish by adding "ars." If you make a mistake, you can step backwards through the program by pressing the TAB key. If you need help you can get on-screen aid by pressing the HELP key or F1. The program's sensible design also includes a screen calculator which can be summoned at any time by pressing F2.

*PHASAR* can also handle transactions which require you split expenses from a single source. The value of this ability will become evident the first time you purchase several items which should be entered in different budget categories. And if your memory is as short as mine, you'll appreciate *PHASAR*'s ability to add comment lines to each transaction.

The program goes the extra mile in an attempt to be user friendly and even includes a function which lets you enter groups of transactions which occur repeatedly like first-of-the-month bills. You can define up to 17 pages of transactions and can select a page number for the group of transactions which you wish to define.

Any transaction displayed on the screen can be edited. Simply move the cursor cell around the screen and type over any incorrect information. The summaries and account balances will automatically be updated. Still, there are a few edits which you cannot do—for example, change a transfer into something else. This sensible scheme protects the integrity of the data and summaries. You can, however, delete a transaction (and re-enter it in another format).

The Reports function lets you view or print detailed information about your income and expenses data. One line is used for each account, and a sort/unsort function lets you put expense and income information in order. Just specify what information you want sorted and reported and whether you want a report on a particular month or the entire year. Here you are able to view the categories in the other functions of this submenu in any order which makes getting a grasp on what is really happening to your budget easier for you to understand.

Also in the Report menu is a function called Net Worth Statement. Using this option will either make your feel very good about yourself or depress you beyond endurance. When selected, the function generates a report using a list of up to 40 assets and 40 liabilities to report on whether you are standing strong on a sound financial rock or are lost in a sea of red ink headed for the rocks of financial disaster. Regardless of what you want to do with your net worth report, just being conscience of your financial strength or weakness can help you plan your financial future. I was glad to see it included in *PHASAR*.

The Loan Analysis menu includes an option which lets you determine how much you can afford to pay for a house, automobile or any purchase which requires that you borrow money. Along with the loan analysis is an option called "savings analysis" which lets you project how much money you can make by loaning your money to the bank. Anyone who has tried to figure out which bank offers the best certificate of deposit will appreciate how easily and quickly the information from each institution can be plugged into this analysis mode to help you invest your money wisely.

The program lets you define and store up to eight loans and recall them at any time to check the current balance or determine the interest paid (or earned) to date. Also, by defining similar loans side-by-side you can compare different interest rates or loan terms. To define a loan you simply enter the original principal, starting date, life of the loan, interest rate, and how many payments will be required. *PHASAR* will calculate the payment due at each payment period and the amount of interest paid over the life of the loan and during the current year (handy for estimating taxes).

Analysis also includes an option called "Plot Trend vs. Budget" which will generate a graphic view of the month-to-month trend of expenses or income and also compare actual amounts against budgeted amounts.

*PHASAR* has even more functions in-

cluding a name, address and telephone list which you can view or dump to a printer. The program lets you call up any name you have entered by typing the first two (or more) characters of the name. If it cannot find a match, it will give you the nearest misses.

Another option helps you keep track of up to 250 special occasions. These events are displayed by choosing the "Special Occasions" function and entering an initial date for the display. You can display a list of upcoming occasions automatically each time you run *PHASAR*.

The tax calculation and projection features of *PHASAR* are contained in a separate program called "PHTAX." This program can compute a tax liability using the information contained in the category sums. And since there is the ability to establish budget amounts for each category for each month, you can use the budgeted category sums for the months where actual data is not yet available to do a midyear tax projection. Small business owners who have to pay projected taxes will love this feature, since it takes a lot of the voodoo out of estimating how much you need to pay in order to avoid year-end penalties.

*PHASAR* also allows you to modify or create tax tables to customize the program for your use or to update it as the tax rates change. If you want, you can even set *PHASAR* up to electronically enter, edit and print all your tax forms (the program comes with 1040 and Schedule A forms).

## Conclusion

*PHASAR* has both the power and features required to put your home or business finances in order. The program goes beyond merely keeping track of your income and expenses; it helps you to get a handle on where your money is disappearing and to focus on ways to control your finances. I especially like the analysis modules and the electronic tax forms. Using those aides alone could easily repay your investment in the program.

While programmer Tom Marks scored a bull's-eye making *PHASAR* friendly, complete and powerful, the three authors of the manual missed their mark—by at least a hundred pages. In an apparent effort to bring a little life into the tedious world of finance, the three went to extremes and constructed a tutorial starring two characters named Eggie and Eloise who operate an Egg Farm. If they had included a bare-bones instructional manual to complement the tutorial I probably would not complain—they did not. Instead the authors force the user to plow through a sophomoric tutorial which is so patronizing it is insulting. To get through the manual you must endure page after page of dialogue like: "Hmmmm. It's really not too hard. The money goes to Eggie, right?" and "The Mrs. tends to get upset about what that does to their budget." No user should be forced to dig through page after page of such dialogue just to uncover useful instructions.

Regardless, don't dismiss *PHASAR* solely on the poor quality of the manual. Instead I suggest you simply ignore the tutorial, dive straight into the program and use the online help functions and the manual's index listing if you run into a area you don't understand. The real acid test of any general accounting package is its accuracy, power and features, and easy accessiblity. *PHASAR* deserves an unqualified recommendation on all accounts.

*PHASAR* is not copy protected and can easily be installed on a hard drive. Along with the manual you get two disks—one labeled "1 meg" and the other "½ meg." The only difference between the two is that the "1 meg" version loads all of *PHASAR's* modules into memory at one loading. The advantage of this is that fewer disk accesses are required.

Reviewed by Gary V. Fields

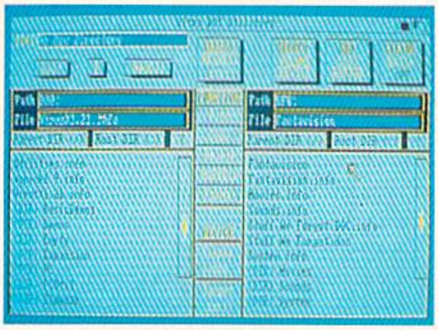
# Ultra DOS Utilities Module 1

**Computer:** Amiga
**Publisher:** Free Spirit Software
58 Noble Street
P.O. Box 128
Kutztown, PA 19530
**Price:** $59.95

*Ultra DOS Utilities* is a program that can help any Amiga user dig deep into and manage their disk files. The Amiga comes with two built-in DOS (Disk Operating System) interfaces: Workbench and CLI (Command Line Interface). In theory you should be able to operate your Amiga entirely from the Workbench, but in reality this friendly operating system's controls are simply too limited. CLI, on the other hand, allows users to dig as deep as they wish into a disk's hidden pathways, providing they have a complete knowledge of the interface's language and syntax. But because of CLI's complexity and limited editing tools, digging deeply requires you do a lot of reading and testing to master it. Thus, sooner or later, almost every Amiga user goes looking for a good DOS utility program to copy, delete, move, inspect, compare, read, print, view and edit individual files. For many, *Ultra DOS Utilities* will do just what the disk doctor ordered.

This utility combines the best of the Workbench world with the power of CLI. To select an option, you simply point and click on an icon. One of the nicest features employed by the program is its dual display windows. A two-window setup is important because it allows you to view the directories of two separate drives at the same time. The two windows look exactly alike, except one is designated as the source disk and the other as the target disk. You can toggle the designation of these two by simply pointing at the word *Source* and clicking the mouse.

Once you have selected a source and target disk (a single disk can be both source and target) the program makes it easy to find, copy, move or delete files between the two. This ability is important when you are operating on files (and most disks have dozens, if not hundreds of them) which do not have an icon attached (the reason you cannot select them from the Workbench). One important directory you'll often find yourself adding to is C. This directory holds all the command files (like format, copy, run and makedir) which give DOS its power. Most programs require only a few specific C commands, but without those on your SYS: disk the programs will not work. To save yourself a lot of disk juggling you should duplicate the necessary commands to the C directory on your boot disk. With *Ultra DOS Utilities* this is an effortless task.



While the program has features similar to many other DOS utility programs, this one earns its pay in the way it handles hard disk drives.

It is true you can do everything with CLI that you can with this program, but DOS utility programs are appealing because they make managing your disk files simple and straightforward. Because filenames are automatically duplicated, no misspelled commands or filenames creep in to abort your command or corrupt your disk.

The program includes most of the commands you'll need to manage your disk files as well as options to create directories and format disks. It even has an option to let you attach, edit or delete comments to your files. A special "info" screen lets you view the size of, change the protection status of or edit individual files.

The copy routine is very flexible and allows you to select individual or multiple files. You can even define a particular character pattern (including wild cards), so the program selectively picks only files with specific attributes (time or dates stamps, .doc, .iff, etc.). The program also includes an option which will warn you if it is about to overwrite another file on the target disk with the same name (believe me, this feature can be a life saver) and will automatically format the target disk if you wish.

You don't have to look very long to discover there are more than a few DOS utility programs around for the Amiga. There are even some very good ones in the public domain. So what puts the "ultra" in *Ultra DOS Utilities?* Actually, I'm not sure its claim to "go beyond all others" is justified. (I'm still looking for that single DOS utility program that does *everything* I want.) While the program has features similar to many other DOS utility programs, this one earns its pay in the way it handles hard disk drives.

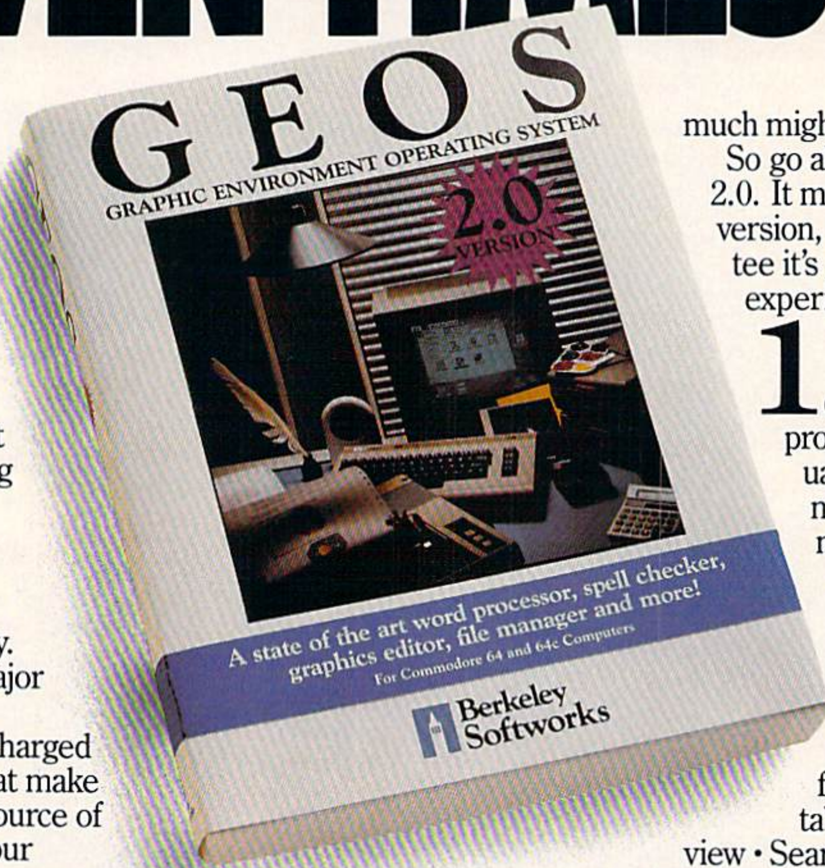
Anyone who uses a hard drive lives in fear of the thing crashing. (I've lived through the experience twice and, believe me, twice is two times too many.) The prudent thing to do if you own a hard drive is to routinely back up all those files. Unfortunately backing up 40MB of files takes a lot of time, patience and 40–45 floppies. The only thing I dread more than a hard drive crash is the chore of backing it up.

This is where *Ultra DOS Utilities* shines. The program has a special feature just for backing up hard drives. You simply select dh0:, dh1: (or whatever your drive is called) as the source device and df0: or df1: as the target device. Then you simply sit back and read a book, watch an epic film or whatever while the program works. All you have to do is keep feeding the target drive blank disks when prompted. The program will automatically format and name the target files.

How long this backup process takes the first time depends upon how much of your hard drive's space is used. I have a 40MB drive divided into two devices (dh0: and dh1:), each of which is about 38% full. To back up the information on one of those drives (about eight megs) took me just over an hour and ten floppies. But once done, future backup sessions are less time consuming. This is true because rather than having to duplicate every file (what I was doing before *Ultra DOS Utilities*), I can tell the program to back up only files which have been stamped with a date since my last backup session (we *are* all date stamping our files, aren't we?). This

*Continued on page 111*

# WE'VE GOT
# SEVEN TIMES BE




If we told you there's something that's seven times better than GEOS,™ would you believe it? Well, believe it. It's called GEOS 2.0.™ And it's filled with new features, including the one thing you'd expect from a package bearing the GEOS name.

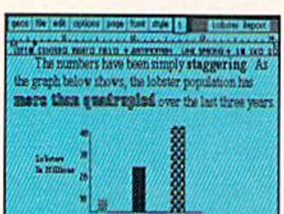
Power.

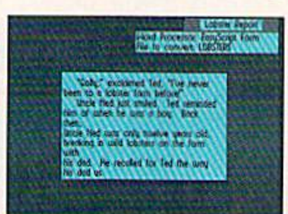
Not the kind that sends a small surge through your creativity. We're talking about major productivity power.

GEOS 2.0 is supercharged with new strengths that make it the most powerful source of integrated software your Commodore 64's ever seen. And what isn't completely new has been radically improved. In fact, we actually included other applications—products we used to sell separately—right into this package.

For example, the entire contents of geoWrite Workshop, including geoWrite 2.1™ (the full-featured word processor) have been added along with geoSpell.™ And a new feature lets you mix graphics with text around any number of columns.

It doesn't even matter if the text is from some other Commodore-based program. Because GEOS 2.0 converts it with one simple point and click.


geoWrite


Text Grabber


geoSpell

There's a new deskTop.™ A new painting toolbox. And new muscle that makes your mouse much mightier, for starters.

So go ahead. Try GEOS 2.0. It may be our second version, but we guarantee it's seven times the experience.

**1.** geoWrite 2.1: NEW! Full-featured word processor • Individual paragraph formatting • Expand margins to 8″ • Left, right, center and full justification • Multiple vertical spacing options • Headers and footers • Decimal tabs • Full page preview • Search and replace • Word wrap • 10 fonts in 7 styles and multiple sizes • Pagination • Insert, delete, move or copy • Mix text and graphics • Special feature to create multiple columns, add headlines and borders • Produce near-typeset quality output on an Apple® LaserWriter™ with PostScript.™

**2.** Text Grabber:™ NEW! Import text from any Commodore word processor such as

Reviewed by Steve King

# AmigaDOS 1.3

**Computer:** Amiga
**Publisher:** Commodore Business Machines, Inc.
1200 Wilson Drive
West Chester, PA 19380
**Price:** $29.95

Several pages of the manual are devoted to listing alternate startup-sequences to use for different purposes.




AmigaDOS 1.3 is basically an upgraded version of the current Amiga operating system. It not only enhances the efficiency of the Amiga, but it also adds several new and useful features. Some of these will be transparent to the average user and used only by programmers, while others will be constantly used by all. A detailed tutorial on these features is outside the scope of this review; my aim is to provide an overview of the changes and additions. The enhancer software package contains three diskettes: Kickstart 1.3, Workbench 1.3 and Extras 1.3.

## Kickstart 1.3

The new Kickstart is supplied on diskette for Amiga 1000 owners and is available through dealers on ROM (a computer chip) for Amiga 500 and 2000 owners. Basically, the only new capability of Kickstart 1.3 is that it permits autobooting directly from a hard disk drive (but only if your hard disk controller card is capable of autobooting). Unlike previous versions of the operating system, Workbench 1.3 can be used with Kickstart 1.2, so ROM replacement is not necessary to take advantage of the new 1.3 operating system.

## Workbench 1.3

Since there are so many new features in the new Workbench, it is difficult to know where to begin, but perhaps the most noticeable change is in the printer drivers. These are short programs which instruct the computer and programs how to operate your printer. If you have ever listed these files (which are located in the printer subdirectory of the devs directory), you will notice that there is a separate driver for each brand of printer. Not only has this list been expanded (which made it necessary to place them on the Extras disk), but the drivers have also been made more efficient. As a result, the speed of printing—particularly printing graphics—has been increased from between five to 30 times!

Additionally, there are now two separate print control screens in Preferences. A new graphic window has been added which gives you extensive control over the output of the printer. Among other things, it allows you to control smoothing, density, size and image positioning.

AmigaDOS 1.3 also provides a recoverable RAM drive. This lets you segregate an area of memory that emulates a diskette, but unlike the previous RAMdisk, doesn't disappear when the Amiga is rebooted. If you have sufficient memory, you can even mount a RAM drive as large as a normal diskette and DISKCOPY an entire diskette (such as Workbench) to it.

The System drawer contains several programs to manage the expansion memory of the Amiga as well as a time-saving enhancement to the Format utility. In past versions of AmigaDOS, formatting a diskette was quite time consuming, as each of the 80 tracks was individually formatted, even if the diskette had been formatted previously. The Format Quick option essentially lets you erase a previously-formatted diskette in about eight seconds. Finally FixFonts updates and corrects the list of fonts in your font directory if you have added new fonts to it. Speaking of which, the Extras disk now contains three new fonts: Times, Courier and Helvetica.

The Utilities drawer contains a number of new programs the most useful of which is MORE—a utility for displaying ASCII text files. Unlike the command TYPE, MORE displays the file a page at a time and provides simple commands for scrolling through it. The new Clock Pointer program turns your mouse pointer into a small digital clock, and GraphicDump will print out the front-most screen visible on your monitor. It even waits ten seconds to give you a chance to move the screen you want printed to the front. PrintFiles automatically sends an ASCII text file or files on disk to your printer, and CMD redirects output from the serial or parallel port to a specified diskette file.

For CLI users, probably the most important addition to Workbench 1.3 is the Shell program. Similar to the CLI environment (where you can perform functions and operations using AmigaDOS commands), it provides an upgraded and friendlier environment. You can use the cursor keys to move around a line of entered text and delete specified sections of that line. Most useful is the function which permits you to recall previously-typed commands, edit and then execute them. Shell also provides an alias function which lets you assign a short name to a much longer string of words. For example, if you type the command line "Alias cpy "diskcopy df0: to df1:", whenever you type the letters cpy (and press RETURN), the DISKCOPY command will execute and copy a diskette from drive df0: to df1:. This is also quite useful in assigning short names to much longer directory path names.

## The Commands

For those who work in the CLI environment, AmigaDOS 1.3 has enhanced existing commands *and* added a number of new ones which I will outline.

1. AVAIL tells you exactly how much memory (both chip and fast) is available at the time the command is executed.
2. DISKDOCTOR (which attempts to salvage files from a corrupted disk) has been modified to actually fix the corrupted disk. To be safe, however, the utility still

reminds you to copy the files to another diskette.

3. FF (FastFonts) is a short program which significantly speeds up text display. The most efficient use of the command is to insert it in the startup-sequence so that it will be executed upon boot up.

4. ICONX permits execution of a script or batch file from the Workbench. Previously, an icon could only execute an object module program. With ICONX, you can click on an icon associated with a batch file containing a number of different commands.

5. INSTALL has been enhanced with the CHECK parameter to determine whether the boot block of any standard diskette is normal. If it is not, you may have an insidious virus on that disk.

6. REMRAD can remove the recoverable RAM device from the computer's memory. Previously, once the RAMdisk was mounted, you could never remove it without rebooting the computer.

7. RESIDENT is one of the most valuable new commands. When using the SHELL, RESIDENT will load most user-specified commands into memory where they will reside, so future use of those commands will not require constant disk access.

AmigaDOS 1.3 also provides several new devices. One of these is SPEAK which allows you to direct the output of a text file directly through the speech synthesizer of the Amiga. By executing the command "COPY filename to SPEAK:", the computer will speak the contents of the file. Additionally, several new libraries are included which support the optional 68881 co-processor. And last but not least, AmigaDOS 1.3 provides hard disk users with the FastFileSystem. It significantly increases the transfer rate of data, and also the amount that can be stored on the disk (by about 5%). While it can only be used with hard disk drives, some PD programs allegedly can adapt FFS for use with floppy disks.

## Extras 1.3

Sorry to report that there's not much new on the Extras disk except the vast majority of the printer drivers and the three new fonts that have been moved there to make room for all the new stuff on the Workbench diskette. Unfortunately, no change has been made to AmigaBASIC (which sorely needs attention and treatment), although MicroSoft is reportedly working on some fixes.

## The Manual

The documentation accompanying AmigaDOS 1.3 is a softbound, 150-page manual. Commodore took great care to insure complete and thorough documentation of all of the features—even those which may not have been added but were not adequately documented in the past. The manual also contains many hints and examples to make using AmigaDOS easier. For example, several pages are devoted to listing alternate startup-sequences to use for different purposes. Internal switch settings are illustrated for all the printers supported by the included printer drivers, and sample MountList entries are provided for the various devices.

## Summary

The enhancements and improvements to the Amiga Operating System contained in AmigaDOS 1.3 are substantial, and, above all, evidence Commodore's dedication and continued support for the Amiga. The update makes the Amiga a more powerful computer, and one that is easier and friendlier to operate. Considering the number of features and the moderate price of the package, AmigaDOS 1.3 is certainly worth purchasing. C



## Welcome to Q-Link.

You and your Commodore® probably have a very good relationship. But even the best relationships need to grow. That's why there's Q-Link.

Q-Link connects you with tens of thousands of friendly, interesting people all over the country. Share stories, talk shop, tell jokes, or just shoot the breeze with them in a whole new way. On your Commodore.

When you and your Commodore start talking to the rest of the world with Q-Link, exciting things start to happen. Things that are sure to improve your relationship. Like playing the latest interactive, full-color games. Taking college courses. Accessing over 15,000 software programs. Enjoying guest speakers on a wide range of topics.

And Q-Link gives you a direct connection to the experts at Commodore headquarters as well as the major software publishers – a Q-Link exclusive.

There's so much to do on Q-Link, it can't all fit into this ad. For that, you'll need our full-color program guide, with a complete calendar of events and activities. And you'll get that free from Q-Link every month.

## A special offer.

If you don't have a modem, Q-Link will help you get one at a price lower than anyone could imagine. For details, call 1-800-782-2278, Ext. **2400.**

You'll also get a free Q-Link Starter Kit, including software. It's easy to get going and there's plenty of online support every step of the way. Like Q-Link support groups and helpful Q-Guide experts.

## Getting into Q-Link.

You'll love being a member of Q-Link. You pay only $9.95 a month (and any local phone charges) for "Basic" service, which includes unlimited access to the latest news, sports, and entertainment information. Even a full-featured encyclopedia. We also offer "Plus" services such as




shopping and travel reservations for only 8¢ per minute extra.

It's time you and your Commodore got out and talked to more interesting people than just each other. And on Q-Link, it couldn't be easier.

*To join Q-Link now, call:*

**1-800-782-2278**

Ext. 2400

**Add new life to your Commodore.®**


1084
Commodore



# The computer that works like the mind of a musician.

A musician's mind is like a miraculous computer that runs several programs at the same time. It weaves a bass line while painting an improvised melody. The mathematics of chords and scales flood its memory, along with emotion and occasional inspiration. It's a perfect network of intricately choreographed events—all occurring at once.

Commodore® Amiga personal computers work much the same way.

Through a process called multi-tasking, Amigas can actually run several programs at once. If you're composing or arranging music on a computer, multi-tasking can mean a radical increase in speed, spontaneity, and creativity.






Because with an Amiga,® you can run a MIDI music sequencer while you edit patches, samples—even your production notes. And you can compose a music video by running powerful Amiga graphics software in concert with MIDI music tracks.

So get a closer look at the computer that thinks like you do. See your Authorized Dealer, or call 1-800-343-3000, ext. 200 for in-depth information about the affordable Amiga 500, the expandable Amiga 2000, and the large and growing library of Amiga music software.

**Only Amiga Makes It Possible.**

Reviewed by Jeffery Scott Hall

# X-Specs 3D

**Computer:** Amiga
**Publisher:** Haitex Resources
208 Carrollton Park
Suite 1207
Carrollton, TX 75006
**Price:** $125.00

From Haitex Resources comes X-Specs 3D, a hardware and software combination used to generate "true 3D." When I received the product for review, I was a little apprehensive about the exact purpose of the glasses and how the user would benefit. Now those doubts are gone. The package contains the following items: a pair of X-Specs 3D glasses, an interface which plugs into the second joystick port, and an introductory X-Specs 3D disk. Let's take a closer look at the hardware.

Since the images are switching between the eyes at such a fast rate, the brain combines them into one to give you a stereoscopic 3D view.



## X-Specs

Haitex has gone to a lot of trouble to make X-Specs both comfortable and visually appealing. The glasses will mold to your head without resting on your nose, through the use of a rubber strip at the top while being held in place by an adjustable elastic strap. This helps to make the glasses comfortable to any user of any age. You will also find X-Specs very accommodating to those who wear prescription glasses. There is enough room to keep the glasses on while wearing X-Specs without interference.

The X-Specs glasses plug in to the interface through the use of a seven-foot cable. The interface contains two jacks allowing you to use two sets of X-Specs glasses simultaneously. However, you may connect more than two pairs to the interface with headphone splitters (Radio Shack part number 274-313).

## What is "True 3D"?

Just how does X-Specs produce what I refer to as "true 3D" or—to use the technical term—"stereoscopic" vision? To understand this, we must first understand the basics of human vision. Each of your eyes views an image from a slightly different angle. These images are flat with absolutely no depth until the brain combines the two flat images. When this happens, you obtain one collective stereoscopic image which has three-dimensional depth. This principle is applied by the X-Specs glasses. The glasses allow the computer to display a flat image to each eye independently, thus tricking the brain into constructing a stereoscopic 3D image.

Well, that's nice but exactly how does this process work? Let's look at the inner workings of the X-Specs glasses a little closer. Liquid crystal display (LCD) shutters can be found inside the glasses. A low-powered current is driven through the LCD shutters which can be polarized in one of two different methods: one crystal clearing while the other is darkening. Through the use of the interface and special software, the LCD's can be controlled by different shades of darkness and clearing. The screen is updated every sixtieth of a second. Every odd sixtieth second the left eye is allowed to view the screen as the left shutter of the glasses clears and the right shutter darkens. This allows the left eye to view what is on the video screen while the right eye is restricted from viewing. This procedure is reversed on every even sixtieth of a second.

To sum it all up: Since the images are switching between the eyes at such a fast rate, the brain combines both images into one to give you a stereoscopic 3D view. Now that we've explored the hardware, let's take a closer look at the software.

## The Software

The disk included with X-Specs contains programs designed for use with the glasses. Many stereoscopic 3D paintings are included, my favorite has a digitized cat appearing as if it is right in front of you.

To create your own stereoscopic 3D pictures, use the handy utility called D3D. This allows you to display any image stored in IFF format. The process used for creating the images is fairly simple, but too lengthy to describe here. One other demo I found quite impressive was one in which spinning cubes leap out directly in front of your eyes.

Science students will find many uses for X-Specs. For instance, they can show off exact reproductions of molecules turning on the screen in real time.

My favorite use of X-Specs is a video game called *Space Spuds*. This is a unique shoot-'em-up game not only because of the 3D aspect, but also because you pilot a space ship through never-ending fields of food. That's right, instead of blasting asteroids, you blast food debris left by an accident from a intergalactic junk-food freighter. Your objective is to destroy as much of the food as possible while avoiding collision. The food includes flying potatoes, chocolate cakes and pepperoni pizzas, not to mention other fattening favorites. What do high-calorie foods have to do with the game? At the beginning of the game you'll see a beautiful, svelte girl. Each time you take a hit she gains weight until she finally explodes from a severe case of indigestion.

The different colors used for graphics prove that 3D games can contain any possible color combination. The stereo sound effects are also appealing. Other features include a pause option and a high-score table. Describing the game does it little justice unless you've actually seen the stereoscopic images.

*Continued on page 118*

by Robert W. Baker

# Hints For Online Conferences

**Explore the inner workings of the Q-Link telecommunications service with network pro Bob Baker.**




Back in November I mentioned a useful hint sent in by BrianD5, well Brian's back. This time Brian has a helpful suggestion for the online events in the various SIG conference rooms and similar meeting places on Q-Link. By the way, Brian helps run the CIN Byte Bar room in People Connection from time to time, so his hint is from first-hand knowledge.

If you're familiar with these online gatherings on Q-Link, I'm sure you're well aware of the online protocol the Sysops use to try to keep things organized. Rather than having everyone trying to "talk" at one time, the Sysop usually runs the event more like a formal meeting. Everyone is supposed to be recognized by the Sysop before entering comments or questions. This is very similar to the way various amateur radio "nets" are handled, with a "Net Control" station handling the interaction between numerous stations all on one frequency. The ideas are the same and work very well if everyone cooperates.

The actual protocol on Q-Link is to send a "?" if you have a question, or a "!" if you have a comment you want to make. The use of very short one-character messages makes it easier for the Sysop to keep track of what is going on and does not overly disrupt the flow of information currently in progress. Once you've entered your "?" or "!," wait to be recognized by the Sysop and then quickly enter your question or comment. Try to keep your messages short and to the point, but on the other hand, don't over-abbreviate so as to make things unintelligible.

This is where's Brian's hint comes in! Once you've entered your "?" or "!" to indicate you have something to say, you can immediately start typing your message in your input buffer. Just be sure not to hit the RETURN key to actually transmit the message until you've been recognized by the Sysop controlling the gathering. In this way you can save valuable time by having most or all of your message ready to transmit the instant you've been recognized. If your whole message didn't fit in the input buffer, you can always type in the remainder of the message and transmit it as usual.

I've used this technique myself for quite some time and can add one other handy thing you might want to remember. A few times I've started typing my text in anticipation of asking a particular question, only to find myself being asked to respond to someone else's question. If something like this happens, don't panic. You can always clear your entire input buffer with one keystroke. Whenever you need to discard everything in your input buffer, simply press the CLR key (SHIFT and CLR/HOME) and everything will disappear with the cursor repositioned at the start of the input buffer. This little trick works everywhere on the system when you're using an input buffer to enter text.

If everyone at a particular gathering is using this little technique to pre-enter text, you'll be amazed at how quickly the messages are handled and how much can be accomplished. The more people in the conference room, the more effective this technique can be. Of course, this type of technique isn't needed in the Auditorium, since all of the questions go into a queue and are processed by the speakers one at a time. But in the conference rooms, and even in People Connection rooms, it can have a drastic effect on what can be accomplished. Thanks for another handy tip, Brian!

By the way, few people understand what is going on at the auditoriums and why there is quite a delay between messages. Well, I can personally testify that running an auditorium can be a very hectic and hair-raising experience, especially if you're all alone. When you enter a question at an auditorium event, it's placed in an input queue for the speakers. The messages are sequenced for the speakers in the order they're received by the system, and one of the speakers must read the message before it can be processed.

In most auditorium events, one speaker tries to coordinate the event with the help of several other speakers. The person controlling the event will usually read the messages, answering some questions and passing on selected questions to other speakers. In this way, each speaker can be preparing his or her answer to a question in their input buffer while another speaker is transmitting text to the people in the auditorium. With several speakers each alternating questions and answers, the whole thing can flow pretty smoothly with very little time between messages.

Some auditorium events use a slightly different variation, where one person becomes a moderator and simply reads and transmits each question from the queue. The other speakers then answer the displayed question without the benefit of seeing it before it's transmitted. For some events, this can be a much quicker way of processing the questions—if the questions and comments are relatively quick with little thought required to respond.

If only one person is running an auditorium event, even with the help of someone from Q-Link, it can be very hectic trying to read and answer questions in a timely fashion. The whole thing gets bogged down, since you have to read and transmit each question before starting to type a response. Plus you occasionally get a "dud" question that has to be weeded out and discarded, so there is generally a small delay between messages with only one speaker at an event. I've handled a few lone auditorium events, and believe me

*Continued on page 118*

# Commodore Users Unite!

This year Commodore users like you came together on GEnie™ to get their Commodore questions answered by experts, their Commodore games won, their Commodore systems updated and their online Commodore opinions confirmed, researched, and applauded

**862,391 times.**



**Join the Revolution.**

# GEnie.™

**For the people, by the people.**

You've never been a follower. You want your voice heard. You want straight, unbiased information about your hardware and software. You want independent news. Opinions. And control.

GEnie understands. In the Commodore RoundTable on GEnie, the people determine what is discussed. And since GEnie is not a hardware or software developer, you'll get the most objective information about what's new on the market. That's why smart Commodore users like yourself turned to us over 800,000 times this year. That's why you should too.

GEnie makes sure you have access to all kinds of great Commodore software–including thousands of games, education and business productivity programs as well as hard-working utilities to expand your Commodore. And the experts you trust will be online when you log on. Plus news, shopping, travel and reference data. All for only 8¢ a minute.

Sign-up is just $29.95, and your first 2 hours are free.* There are no hidden charges or monthly minimums. Now it's your call.

**Here's how easy it is to sign-up from your keyboard now.**

1. Have your major credit card or checking account number ready.
2. Set your modem for local echo (half-duplex)–300 or 1200 baud.
3. Dial 1-800-638-8369. When connected, enter HHH
4. At the U#=prompt enter **XJM11709,GEnie** then RETURN.

Need help or more information? No modem yet? We can help. In the U.S. or Canada call 1-800-638-9636. Join the online Revolution and let your voice be heard.

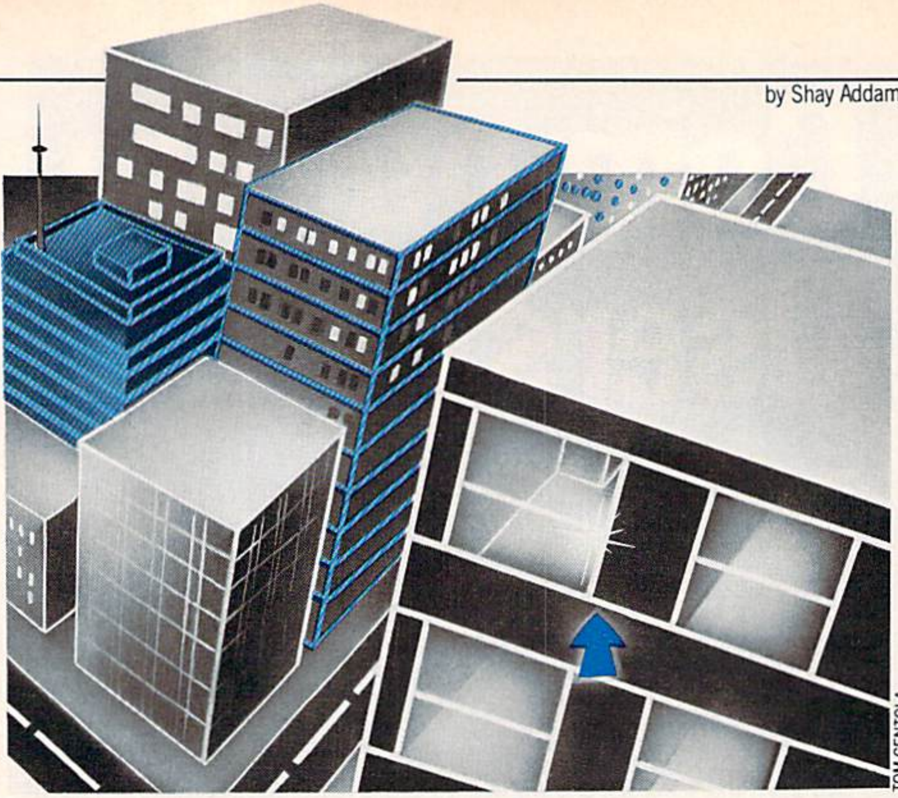
***We bring good things to life.***

*Basic rates and services in effect 9/88 apply in U.S. only. Non-prime time rates apply Mon.-Fri. 6PM-8AM local time and all day Sat., Sun., and nat'l. holidays. Subject to service availability. Some services offered on GEnie may include additional charges.
*$10 credit applies. Offer good for 30 days from sign-up.

by Shay Addams

# Interfacing the Facts

**News and opinion from a leading explorer of those fantasy realms called adventure games.**


TOM CENTOLA

A couple of new releases—*Manhunter* for the Amiga and *Captain Blood* for the Commodore 64—got me thinking about interfaces in adventure games, and how and why they've changed so radically in the past few years. Essentially, the interface consists of two parts: how you tell the computer what to do, and how the computer tells you what happened as a result of your input. The two basic interface types derive from the original mainframe computer games: *Adventure,* which introduced the joystick and animated graphics.

Most of the changes in the way you tell the program what you want to do in adventure games have resulted from the migration of the computer from the business world into the home. The first people to play adventures did so at work, at school or perhaps via a teletype terminal at home. For these students and computer professionals doing database or number-crunching work, part of the fun was in being able to type "kill the dragon, then get the gold" into a computer, instead of "find file xyz." This kind of interface, in which you type in words that the program's parser interprets, was a natural for people accustomed to communicating with computers in this fashion.

## The Interface goes MAD

Today, however, many computer players don't even know how to type (or at least do it very well), and don't want to learn. They'd rather have fun playing games, and the evolution in interfaces in the business world—from parsers to menus and now icons—works even more successfully in the world of gaming. Sierra's new *Manhunter,* for example, does away with typing altogether, ushering in the most elegant interface I've seen in an adventure game.

Instead of typing in commands as you normally do in Sierra's animated adventures, you rely on the mouse or joystick and one of several on-screen cursors. If an arrow appears, you can move it to a door or other exit, then press a button to go in that direction. Position it over an object, and the program asks if you want to take a closer look at the item, in which case you'll view a new picture (at double the resolution of Sierra's previous adventures, which finally take advantage of the Amiga's capabilities). If it's an item that can be picked up or used, the cursor turns into a hand and the program asks if you want to add it to your inventory or use it. The only time I had to type was when using MAD, a "mini-computer" used by the Manhunters, to look for information on the people in New York.

MAD is an integral part of *Manhunter*'s plot, in which you are working for aliens (called orbs, because they look like flying eyeballs) who have taken over New York in the year 2002. Your job is to track down criminal humans, and MAD's function is to show an aerial view of the city and close-ups of building interiors, where a moving blip represents the person you're spying on. It's like the city maps used in *Police Quest,* but more detailed (especially in the interior close-ups), and you don't have to drive a car around and crash into things every ten seconds. To travel to another location, you simply position the cursor over any location that is blinking and punch the button. The number of places you can visit at the outset is limited, but successful adventuring will expand the variety of destinations. MAD offers a convenient feature that automatically records each clue you find, so instead of taking notes every time you run across a clue, you can access MAD and read your notes. (It doesn't offer auto-mapping like the Infocom games, but I have yet to see one program—of any type—that has *all* the features I want.)

*Manhunter* uses less text in its responses than most Sierra games. And some of the visual clues are animated, an interesting element I don't recall having seen elsewhere. Another dramatic change from the standard Sierra format lies in the perspective of the illustrations: instead of seeing your animated character in a location, you view that room through his eyes most of the time. As usual, Sierra has packed in a variety of entertaining arcade-style games that are never too difficult to interfere with the flow of the action. One nice touch is that you rarely (if ever) get killed, so you don't have to keep restoring a saved position. (Surprisingly, this adventure was written by Dave Barry and Dee Dee Murry, who are better known for the war games *The Ancient Art of War* and *The Ancient Art of War at Sea.)*

Another example of a no-typing interface is in *L.A. Crackdown* from Epyx, a 64 and Amiga mystery in which your goal is to nail a big-time drug dealer. The joystick is used to make selections from a menu that occupies the central portion of the screen's lower half. Select "Go to," and another menu lists potential destinations. Other choices include "bug" (to plant an electronic listening or video device), "review" (to play back phone calls recorded by a bug), and "arrest" (to yell "Freeze, sucker!" at the nearest criminal).

The top half of the screen shows a pair of pictures that represent video feeds from

your bugs. Other windows on the bottom half show a map of the city, or of your parked stakeout van's current location. It's an unusual approach for a mystery game, one that works very well. (But this is also a very easy game that veterans may finish too quickly.)

Interplay tried a menu-based approach in their series of graphic adventures, of which the most recent release was *Tass Times in Tone Town*. From a list of verbs and one of nouns, you use the stick or mouse to pick from each column and form a command. Or you could pick a verb, then click on something in the picture. This interface was somewhat limited by the fact that you still had to type in certain sentences that were vital to puzzle-solving, because there wasn't enough room to fit every word in the game's vocabulary on the lists. Lucasfilm's *Maniac Mansion* and *Zak McKracken* handle this task even more smoothly, mainly by limiting the vocabulary.

Recently we've seen even more imaginative no-typing-required "parsers" that replace the words with icons. ICOM's series of graphic games for the Amiga—*Deja Vu* (also for the 64), *Shadowgate* and *Uninvited*—let you click on one of the verbs in a list, then move a cursor over the picture window and click on an object to perform that action on the item.

## An "Iconversation" with Captain Blood

A science fiction adventure for the 64, *Captain Blood* actually replaces the words with icons. You communicate with an assortment of aliens by selecting up to eight icons to form a sentence. The icons' definitions (want, know, say, destroy, me, brave and 114 others) are listed in the manual, though the meanings of some, such as "laugh," are apparent. "Reading" an alien's messages is easier than formulating your own. A message appears as a list of icons, but you can point to an icon and its definition is displayed. Needless to say, you won't be able to fulfill the game's goal without learning the aliens' lingo.

That goal—and the game's plot—are as imaginative as the interface. You play the role of Captain Blood, who was programming a great new computer game while his ship raced through space. But something went wrong during a Hyperspace warp, and Blood was "sucked into my own game!" As a result of a peculiar side effect, he was also cloned five times, and will die unless you track down each of the clones before time runs out. There's more to do than just chat up aliens from the other side of the universe: you've got to get there first, which requires learning to fly the spaceship simulator. Besides its original plot and interface, *Captain Blood* offers extra replay value: a different galaxy is created when you start a new game.

## Clues of the Month

Danny Peterson and Lou Tometich sent in some tips for *Pool of Radiance*. (These are not coded, so don't read them unless you really need help.) The Slums: Use search mode after clearing the first three rooms. At 13,10, you should run the errand for Ohio. You must map all the Old Rope Guild (6,10) to complete the slums. Try to sell weapons or items at the Armory to learn their true value. If the shopkeeper offers more than it's worth, equip it to see if it's magical. (This makes the ID command unnecessary.) To win the main battle in the Slums (two ogres, four trolls), hire a Swordsman and a Hero at the Guild in Phlan. Equip Fighters with two-handed swords and bows/arrows, and have the Magic Users cast Sleep. Deal with the trolls first by hitting one of them until it is dead, then slaying the next; otherwise, the trolls will regenerate. ■

# BRiWALL

Our Third Year In Business! We Know How To Service Our Customers!

## SOLID PRODUCTS & SOLID SUPPORT

P.O. Box 129 / 58 Noble Street
Kutztown, PA 19530

## 24 HOURS — TOLL FREE
## 1-800-638-5757
**OUTSIDE USA CALL 1-215-683-5433**

SATISFACTION GUARANTEED
Earn Bonus $$
No Surcharge On Charge Orders
Friendly Service

### ACCESSORIES

| | |
|---|---|
| 40/80 Column Switch Cable | 18 |
| Apro Ext.64-Crt. Port Ribbon | 17 |
| Apro Ext.64-User Port Ribbon | 19 |
| Aprospan 4 Slot Cartrdg Holder | 25 |
| Cover 1541 | 7 |
| Cover 1571 | 9 |
| Cover C128 | 9 |
| Cover C64 | 8 |
| Drive Box | 27 |
| Final Cartridge V3 | 49 |
| Hotshot Plus Interface | 69 |
| Joystick-Bat Handle | 22 |
| Joystick-Ergo Stick | 22 |
| Joystick-Super 3 Way | 25 |
| Joystick Y Adapter | 7 |
| Leroy's Cheat Sheets C64 each | 3 |
| Leroy's Cheat Sheets C128 each | 7 |
| Lightpen-Model 170c | 69 |
| Lightpen-Model 184c | 49 |
| M-3 Mouse 64/128-Proport. | 39 |
| Mach 128 Cartridge | 35 |
| Mousepad | 8 |
| Paper Banner Colors each | 10 |
| Power Supply-C128-Repairable | 55 |
| Power Supply-C64-Repairable | 39 |
| Quick Brown Box 32K | 79 |
| Quick Brown Box 64K | 99 |
| RGB to RCA Cable | 9 |
| RS232 Deluxe Interface | 39 |
| Ribbons for Printer | Call |
| Ribbon Renew Re-Ink w/no eqp. | 5 |
| Serial Box 2 for 1 | 29 |
| Serial to Serial Cable-6 ft. | 9 |
| Super Chips 128 | 45 |
| Super Chips 128-D | 45 |
| Super Chips 64 | 25 |
| Super Chips 64 mode on 128 | 25 |
| Super Graphix Gold Prntr Intrfc | 89 |
| Warpspeed 128 | 35 |

### BOOKS

| | |
|---|---|
| 1541 Troubleshoot & Repair Guide | 17 |
| 1571 Internals* | 17 |
| Anatomy of C64* | 17 |
| Anatomy of the 1541 Book | 17 |
| Basic 7.0 Internals Book | 19 |
| Basic 7.0 for C128 Book | 10 |
| Beginner's Guide to BASIC 8 | 15 |
| C128 Assembly Language Prog Book | 14 |
| C128 Internals* | 17 |
| C128 Programmer's Ref. Book | 20 |
| C128 Tips & Tricks Book | 17 |
| C128 Troubleshooting & Repair Book | 17 |
| C64 Basic Programming | 25 |
| C64 Programmer's Reference Guide | 17 |
| C64 Tips & Tricks* | 17 |
| C64 Troubleshoot & Repair Guide | 17 |
| C64/128 Asmbly Lang. Prog Book | 14 |
| GECS Get Most Book | 9 |
| GEOS Inside & Out* | 17 |
| GEOS Programmer's Ref. Guide | 17 |
| GEOS Tips & Tricks* | 15 |
| Hot to Program in BASIC | 24 |
| I Speak Basic to My C64 Book | 8 |
| K Jax Book Revealed 2 | 23 |
| K Jax Book Revealed 1 | 23 |
| Machine Language 64 Book | 13 |
| Superbase The Book 64/128 | 15 |
| Troubleshoot & Repair C64 Book | 18 |
| Twin Cities 128 Compendium 1 | 15 |
| Abacus Disks each* | 12 |

### GENERAL PRODUCTIVITY

| | |
|---|---|
| Bankstreet Writer | 35 |
| Business Form Shop/64 | 30 |
| CMS Accounting/128 | 129 |
| CMS Inventory Module 128 | 53 |
| Chartpak 128 | 29 |
| Chartpak 64 | 29 |
| Datamanager 128 | 39 |
| Datamanager 2 (64) | 17 |
| Fleet System 2 + /64 | 39 |
| Fleet System 4 | 52 |
| Fontmaster 128 w/Speller | 39 |
| Fontmaster II/64 | 35 |
| KFS Accountant 128 | 109 |
| Leroy's Label Maker | 24 |
| Microlawyer/64 | 39 |
| Paperclip 3 | 39 |
| Paperclip Publisher | 39 |
| Partner 128 | 39 |
| Partner 64 | 30 |
| Personal Portfolio Manager 128 | 42 |
| Personal Portfolio Manager 64 | 29 |
| Pocket Dictionary 64/128 | 10 |
| Pocket Filer 2 | 29 |
| Pocket Planner 2 | 29 |
| Pocket Superpak 2 | 67 |
| Pocket Writer 2 | 39 |
| Security Analyst 128 | 35 |
| Superbase 128 | 39 |
| Superbase 64 | 29 |
| Sprbase/Sprscrpt/Book 128 PAK | 69 |
| Sprbase/Sprscrpt/Book 64 PAK | 59 |
| Superscript 128 | 29 |
| Superscript C64 | 29 |
| Swiftcalc 128 w/Sideways | 39 |
| Swiftcalc 64 w/Sideways | 17 |
| Sylvia Porter's Financial Plan 128 | 39 |
| Technical Analysis System 128 | 42 |
| Technical Analysis System 64 | 29 |
| Timeworks Account Payable 64 | 39 |
| Timeworks Accounts Receiveable 64 | 39 |
| Timeworks General Ledger 64 | 39 |
| Timeworks Inventory Managemnt 64 | 39 |
| Timeworks Payroll 64 | 39 |
| Timeworks Sales Analysis 64 | 39 |
| Vizistar 128 | 60 |
| Viziwrite 128 | 60 |
| Wordpro 128 w/Speller w/Filepro | 30 |
| Wordpro 64 w/Speller w/Turbo Load | 30 |
| Wordwriter 128 | 39 |
| Wordwriter 3 for C64 | 30 |
| Write Stuff 64 | 19 |
| Write Stuff 64 w/Talk | 24 |
| Write Stuff C128 Version | 24 |

### OUR POLICY

Our policy is to stock what we advertise and carry the best products available for your C64 and C128 computers. Over 400 of the best productivity, educational & technical software and a host of accessories in stock now! And CHECK OUT OUR C128 LINE! Your will be amazed at the number of products that we carry for this fantastic machine!

### EDUCATIONAL

| | |
|---|---|
| Alphabet Zoo | 18 |
| Alphabuild | 6 |
| Calculus by Numeric Methods | 27 |
| Counting Parade | 6 |
| Designasaurus | |
| Early Learning Friends | 6 |
| Easy Sign | 17 |
| Evelyn Wood Dynamic Reader | 17 |
| Facemaker | 16 |
| First Men on Moon Math | 19 |
| Grandma's House | 6 |
| Hayden SAT Preparation | 32 |
| Jungle Book (Reading 2) | 19 |
| Kids on Keys | 18 |
| Kidwriter | 22 |
| Kindercomp | 18 |
| Linkword: German | 19 |
| Linkword: French | 19 |
| Linkword: French 2 | 19 |
| Linkword: Italian | 19 |
| Linkword: Russian | 19 |
| Linkword: Spanish | 19 |
| Little Computer People | 12 |
| Mathbusters | 6 |
| Mavis Beacon Teaches Typing | 30 |
| Peter & Wolf Music | 19 |
| Peter Rabbit (Reading 1) | 19 |
| Protutor Accounting 128 | 69 |
| R.S.V.P. | 21 |
| Sky Travel | 35 |
| Stickybear ABC's | 22 |
| Stickybear Math 1 | 22 |
| Stickybear Math 2 | 22 |
| Stickybear Numbers | 22 |
| Stickybear Opposites | 22 |
| Stickybear Reading 1 | 22 |
| Stickybear Reading Comprehension | 22 |
| Stickybear Shapes | 22 |
| Stickybear Spellgrabber | 22 |
| Stickybear Townbuilder | 22 |
| Stickybear Typing | 22 |
| Success w/Math Series each | 23 |
| Toy Shop 64 | 22 |
| WhereinEurope is Carmen Sandiego | 29 |
| Where in USA is Carmen Sandiego | 29 |
| Where in World is Carmen Sandiego | 29 |
| Widham Classics-Alice/Wonderland | 32 |
| Widham Classics-Below the Root | 12 |
| Widham Classics-Swiss Famly Robs | 12 |
| Widham Classics-Treasure Island | 12 |
| Widham Classics-Wizard of OZ | 12 |

### GEOS

| | |
|---|---|
| Becker Basic for GEOS 64 | 35 |
| Desk Pak Plus-Geos | 22 |
| FontPak Plus-GEOS | 22 |
| GEOS 64 v 2.0 | 39 |
| GEOS Programmer/64 | 45 |
| GEOS Write Workshop/64 | 39 |
| GEOS Write Workshop/128 | 45 |
| Geocalc 128 | 45 |
| Geocalc/64 | 35 |
| Geofile 128 | 45 |
| Geofile/64 | 39 |
| Geopublish 64 | 45 |
| Geos/128 | 45 |
| Geospell 64/128 | 19 |
| Wordpublisher 64/128 (for GEOS) | 28 |

### CREATIVITY

| | |
|---|---|
| Animation Station | 65 |
| Award Maker Plus/C64 | 29 |
| Billboard Maker/64 | 25 |
| Blazing Paddles | 25 |
| Bumpersticker Maker | 35 |
| Business Card Maker | 29 |
| Button & Badge Maker | 39 |
| Cad 3D/64 | 39 |
| Cadpak 128 | 42 |
| Cadpak/64 | 29 |
| Certificate Maker | 17 |
| Certificate Maker-Library | 12 |
| Colorez 128 | 12 |
| Computer Eyes | 105 |
| Create a Calendar | 22 |
| Doodle/64 | 29 |
| Flexidraw 5.5/64 | 29 |
| Flexifont/64 | 24 |
| Graphics Art Disk 7-12 each | 9 |
| Graphics Galleria Pak 1 | 24 |
| Graphics Galleria Pak 2 | 24 |
| Graphics Intergrator 2/64 | 24 |
| Home Designer | 45 |
| Home Designer/Circuit Symbol Lib | 10 |
| Icon Factory/64 | 25 |
| Label Wizard | 21 |
| Newsmaker 128 | 24 |
| Newsroom | 17 |
| Newsroom Clip Art Disk 1-3 each | 13 |
| PC Board Maker 64 | 79 |
| Perspectives II/64(3D) | 39 |
| Photo Finish | 19 |
| Postcards | 19 |
| Printmaster-Fantasy Art Gallery | 15 |
| Printmaster Gallery I/64 | 15 |
| Printmaster Gallery II/64 | 15 |
| Printmaster Plus/64 | 25 |
| Printshop/64 | 35 |
| Printshop Companion | 27 |
| Screen F/X | 25 |
| Sketchpad 128 NEW | 24 |
| Slideshow Creator | 13 |
| Video Title Shop w/Gr Comp 1 | 25 |
| Video Title Shop s/Gr Comp 2 | 17 |

### PERSONAL

| | |
|---|---|
| Boston Bartender's Guide | 12 |
| Bridge 5.0 | 22 |
| Cardio Exercise | 75 |
| Cardio Exercise & Heartlab Combo | 85 |
| Celebrity Cookbook/64 | 19 |
| Dr. Ruth's Book of Good Sex | 22 |
| Dream Machine Analyze/64 | 19 |
| Family Tree 128 | 39 |
| Family Tree 64 | 39 |
| Heartlab | 49 |
| MK America Cooks Chinese | 12 |
| MK America Cooks Italian | 12 |
| MK Great Chefs of PBS Vol 1 | 12 |
| MK Great Chefs of PBS Vol 2 | |
| MK Great Chefs of PBS Vol 3 | 12 |
| Memory Academy 128 | 15 |
| Micro Kitchen Companion | 29 |
| Monopoly C64 | 25 |
| Muscle Development Package | 54 |
| Sexual Edge/64 | 19 |
| Stress Reduction-Enhanced | 299 |
| Stress Reduction-Standard | 89 |
| Strider's Classic 1-10 each | 5 |
| Tarot 128 | 15 |

### UTILITIES

| | |
|---|---|
| 1541/1571 Drive Alignment | 25 |
| 1581 Toolkit | 32 |
| Assembler/Monitor/64 | 29 |
| Basic 8 | 25 |
| Basic Compiler/128 | 42 |
| Basic Compiler/64 | 29 |
| Big Blue Reader 64/128 | 32 |
| Bobsterm Pro/128 | 42 |
| Bobsterm Pro/64 | 35 |
| CP/M Kit | 22 |
| Cobol/128 | 29 |
| Cobol/64 | 29 |
| Gnome Kit 64/128 | 29 |
| Gnome Speed Compiler 128 | 29 |
| Kracker Jax Super Cat | 22 |
| Kracker Jax-Hacker's Utilities | 17 |
| Merlin 128 | 45 |
| Merlin 64 | 35 |
| Oxford Pascal 128 | 29 |
| Oxford Pascal 64 | 25 |
| Physical Exam 1541 | 29 |
| Physical Exam 1571 | 29 |
| Power Assembler 64/128 | 30 |
| Power C 64/128 | 30 |
| Programmers Toolbox/64 | 15 |
| Protolinc BBS 128 | 29 |
| Prototerm 128 | 12 |
| RamDOS 128 | 29 |
| RenegadeCopier V2 | 29 |
| Super 64 Librarian | 19 |
| Super 81 Utilities for C128 | 29 |
| Super 81 Utilities for C64 | 29 |
| Super Aide 64 | 25 |
| Super C 128 | 45 |
| Super C 64 | 45 |
| Super Disk Librarian for C128 | 19 |
| Super Disk Utilities 128 | 25 |
| Super Pascal 128 | 45 |
| Super Pascal 64 | 45 |
| Super Snapshot 4 w/C128 Disable | 65 |
| Super Snapshot V4 | 59 |
| SysRES Enhanced | 30 |
| Z 3 Plus | 59 |

### ENTERTAINMENT

| | |
|---|---|
| AD&D Dungeon Master Assistance | 22 |
| AD&D Pool of Radiance | 29 |
| Alf | 12 |
| Battleship | 24 |
| Blackjack Academy | 29 |
| California Raisins | 19 |
| Caveman Ugh*lympics | 22 |
| Chessmaster 2001 | 30 |
| Crossword Magic | 39 |
| Double Dragon | 27 |
| Faery Tales | 39 |
| Jeopardy 2 | 12 |
| Jordan vs Bird | 24 |
| Lord of the Rising Sun | 25 |
| Main Frame | 25 |
| Monopoly | 24 |
| Newromancer | 29 |
| Ocean Ranger | 0 |
| Operation Wolf | 29 |
| Platoon | 25 |
| Powerplay Hockey | 24 |
| Rampage | 27 |
| Rocket Ranger | 27 |
| Roger Rabbit | 15 |
| Scrabble | 26 |
| Scruples | 29 |
| Skate or Die | 22 |
| TV Sports Football | 25 |
| Three Stooges | 27 |
| Ultima V | 42 |
| Wheel of Fortune 2 | 12 |
| Zach Macrakin | 25 |
| Zoom | 22 |

# Home Designer

*When the details are important!*

**Home Designer CAD 128**

Given glowing ratings by every major Commodore magazine, this CAD system outclasses every other CAD program, because of its object-based design. With over 50 powerful commands, 5 drawing layers, superb support of library figures and lazer-quality printouts at ANY scale on your dot matrix printer or plotter, you can create drawings so accurate that a blueprint can be made from them!

Tired of working with poor quality/inaccurate printouts, manipulating little dots on a bit-map, giving up on detailed work because you can't zoom in close enough? Join the professionals!

**only $45.00**

mouse or joystick required

**NEW!**Engineering Library disk available now. **$10.00**



## SKETCHPAD 128

Brand new from Free Spirit, Sketchpad 128 fully supports your C128 and takes advantage of its crisp 80 column graphics capabilities. It is packed with all the features of a professional drawing package such as drawing SMOOTH freehand lines, 3D Solids, creating Slideshows, Cut & Paste, Clip, Flip, Enlarge, Shaded Fill Patterns, a variety of Fonts, Air Brush and more! It supports Printshop graphics and is completely compatible with all BASIC 8 files.

Sketchpad 128 unleashes the graphics power of your C128! It supports your 1351 Mouse, 64K Video Chip, 1581 drive and 80 column display. **What more could any real C128 user ask for?**

**ONLY $24.00**

HOT NEWS!

# NEWS MAKER 128

Finally somebody (Free Spirit Software) has introduced a desk top publishing program for the 128 in its native mode! Take a few moments to think about what should be included! Would you like the crisp & clear 80 column screen? Would you like to zip across the screen with a 1351 mouse? Could you use a Ram Disk that can store multi-page documents & graphics available at the click of a mouse? Also how about storing up to 45 fonts in the Ram Disk for instant access? How about if you could use Print Shop graphics directly from the Print Shop disk? Also be able to use pictures and graphics created with Sketchpad 128 and Basic 8.0. Would you prefer graphic tools that would allow you to draw custom art directly? How about supporting 2 text modes and 9 font sizes? Pour sequential files into columns? Adjust columns around graphics! or type text directly to the screen?




**ONLY $24.00**

C128D (or 64K video) and 80 column monitor

## SIZZLING HOT ENTERTAINMENT TITLES

| | |
|---|---|
| AD&D Dungeon Master Assistance | $22 |
| AD&D Pool of Radiance | 29 |
| Battleship | 24 |
| Caveman Ugh*lympics | 22 |
| Double Dragon | 27 |
| Jordan vs Bird | 24 |
| Lord of the Rising Sun | 25 |
| Monoply C64 | 24 |
| Newromancer | 29 |
| Operation Wolf | 29 |
| Platoon | 25 |
| Powerplay Hockey | 24 |
| Rampage | 27 |
| Rocket Ranger | 27 |
| Roger Rabbit | 15 |
| Scrabble | 26 |
| Scruples | 29 |
| Skate or Die | 22 |
| TV Sports Football | 25 |
| Three Stooges | 27 |
| Ultima V | 42 |
| Zach Macrakin | 25 |
| Zoom | 22 |

**Buy any 3 of the above titles and deduct $5 from your order total!**

Offer good until 2/28/88.

### BONUS DOLLARS

EARN BONUS $$$ WHEN YOU ORDER!!! For every $50 of software and accessories that you order, you earn one bonus dollar. That's an additional 2% discount!! Use your bonus dollars on future purchases.

### CATALOGS

We now have our ALL NEW AMIGA catalog, describing hundreds of products for your computer. Call or write for your copy of our AMIGA CATALOG today!!

**BRiWALL**

SOLID PRODUCTS & SOLID SUPPORT

P.O. BOX 129 58 Noble Street
Kutztown, PA 19530
24 HOURS TOLL FREE
1-800-638-5757

Circle 132 on Reader Service card.

# SCREENFIX

**Create incredible presentations using 100,000 different combinations of effects. Create fantastic animated scripts using the most powerful C64 editor ever created.**

**OUR PRICE $25**

**1541/1571 DRIVE ALIGNMENT**

**1541/1571 Drive Alignment**

This excellent alignment program is a must have for every Commodore owner. Easy to use, it helps you to align your drive so that it runs just as if it were new! The simple instructional manual and on-screen help prompt you thru the alignment procedure and help you adjust the speed and head stop of your drives. It even includes instructions on how to load the alignment program when nothing else will load. Don't be caught short! We get more RED LABEL orders for this program, then any other program we sell. Save yourself the expense! Order now, keep it in your library and use the 1541/1571 Drive Alignment program regularly!! Works on the C64, C128, and SX64 for both the 1541 and 1571 drives.

**STILL ONLY $25.00**

## BASIC 8 IS BACK!!

**!NEW PACKAGING!**
**!NEW SUPPORT!**

This popular package adds extensive 80 column graphics capabilities to your C128. A must for C128 programmers! As an added bonus several preprogammed BASIC 8 applications, such as BASIC PAINT, WRITE and CALC, are included on the flip side!

Free Spirit Software Inc

**JUST $29**

# ICON FACTORY

Convert, Enlarge, Alter, Enhance, Crop, Invert, Flip, Reduce and even Smooth graphics with this great graphics conversion utility.

**OUR PRICE $25**

# Photo Finish

"Optimize" your Hi-Res graphics producing hardcopy with FOUR TIMES the resolution of standard printer dumps.

**OUR PRICE $19**

**ORDERING INSTRUCTIONS**

For your convenience, you can place a phone order 24 HOURS/7 DAYS A WEEK on our TOLL FREE LINE 1-800-638-5757. Price, Availability and Compatability Checks are also Welcome on our order line. Monday thru Friday, 9AM-4PM EST. AFTER HOURS, Orders Only Please!! When placing an order, please specify your COMPUTER MODEL, HOME & DAYTIME PHONE NUMBER, SHIPPING ADDRESS, METHOD OF PAYMENT and ITEMS ORDERED. To help us serve you better, please have all your information, including your CHARGE CARD number, ready before you call us.

ACCEPTED PAYMENT METHODS: We gladly accept payment by: PREPAID BY PERSONAL CHECK (will not hold for clearing) or MONEY ORDER. COD (continental USA only AND $4.00 ADDITIONAL), MASTERCARD, VISA, SCHOOL PURCHASE ORDERS. All payment must be in USA DOLLARS. THERE IS NO SURCHARGE FOR CHARGE CARDS and your card is NOT charged until we ship.

**TECHNICAL SUPPORT**

We do our very best to help you with your product selections, before you order and after you receive your product. General questions, price, and compatibility with your computer, etc. will be handled by our order staff at the time you place your order. BUT if you have specific, detailed questions about a product, printer compatibility questions etc., you will get the most help from our TECHNICAL SUPPORT LINE at 215-683-5699. Call Monday thru Friday, 9AM-4PM EST, and our trained tech staff will be happy to help you.

**SHIPPING POLICY**

ALL ORDERS received before 3PM EST will normally be shipped same or next business day. Out of Stock items will be shipped by the same shipping method as original order, normally within 3 or 4 business days. All UPS shipments are sent SIGNATURE REQUIRED/NO DRIVER RELEASE. ADD the following shipping charges to your TOTAL software order.

UPS: GROUND $4.00 (cont. USA ONLY); AIR/RUSH $7.00 (includes Puerto Rico/Hawaii); OVERNIGHT $12.00 PLUS $2.50 per item (must be received by 12 NOON)

PRIORITY MAIL: USA $4.00 (includes APO/FPO); CANADA/MEXICO $6.00; OTHER FOREIGN $4.00 handling PLUS Actual Shipping (minimum $12.00)

**RETURN POLICY**

We have a liberal return policy to better service your needs. Software piracy is a problem, but as long as our policy is not abused, we will continue to honor it. If within 15 days from the time you receive an item, you are not satisfied with it for any reason, you may return it to us for either a refund, exchange or open credit. REFUNDS ARE SUBJECT TO A 10% RESTOCKING FEE PER ITEM RETURNED ($5.00 MINIMUM PER ITEM). A DEFECTIVE ITEM will be replaced with the same item (NO CHARGE — of course). EXCHANGES/OPEN CREDITS will gladly be issued for the FULL PURCHASE PRICE OF THE ITEM.

by Jerry Penner

# Blackout-Proofing
## *for the Commodore 64*

All computers share a need for clean, pure, uninterrupted power for dependable operation. Even a brownout a fraction of a second in length will reduce your Commodore 64 to the cyan-on-blue screen prompt proclaiming 38911 bytes of free RAM waiting to be programmed. This can be really irritating, especially when things like refrigerators, furnaces, air conditioners, arc welders and industrial equipment many miles away can put dips and spikes in line voltage at any time without warning.

The uninterruptable power supply described here is designed to output lots of clean, stable power to your computer whether or not the local Power Lords are doing the same. While the price of not protecting your computer can range from lost data to a complete set of blown memory IC's (caused by the meltdown of a weak supply), protecting your investment (and sanity!) can be done for under $100. What a bargain!

The device does not work miracles, it merely accomplishes the necessary. It will only supply current to the computer and any parasitic peripherals (e.g., expansion cards, tape drive, etc.). Devices such as monitor, disk drive and printer are not protected and will shut down during blackout. If you can enter commands blind (without monitor), you can still save to tape. Remember that when power does come back, your peripherals will be reset and won't remember any OPENed channels they and the computer were sharing before the power loss.

An uninterruptable power supply (UPS) has three functions: it must store incoming power for future use, provide power for present use, and switch from incoming to stored power within microseconds of detecting low incoming voltage. There are two methods of accomplishing this. One acts as a normal power supply and feeds the computer directly from the transformer until a voltage dip is detected. At that point the output is switched from incoming line to stored power and the necessary voltages are synthesized. The other method (used here) always synthesizes the output voltage, merely switching from line to stored power during a voltage dip. It does consume a bit more power, but has a much shorter switching delay from line to stored current and it's simpler to build.

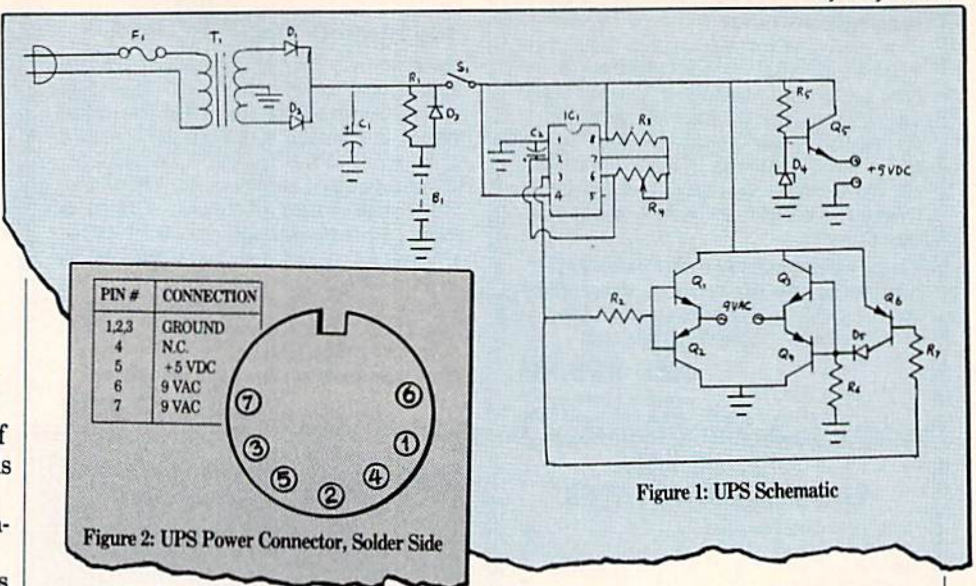



Figure 1: UPS Schematic

Figure 2: UPS Power Connector, Solder Side

## How it Works

The Commodore 64 is a relatively easy beast to feed, since it needs only two voltages. +5 volts DC feeds most of the IC's while the 9 VAC line splits three ways inside the computer. Some of it is rectified and smoothed for a second +5 volt DC line, some is squared up and used for housekeeping and updating the jiffy and time-of-day clocks, and the rest is rectified and smoothed to +12 volts to feed the SID chip.

The schematic in Fig. 1 can be broken down into three parts. F1, S1, T1, D1, D2, C1, R1, B1 and D3 make up the line conditioning, power storage, and line/storage switchover circuit. IC1, R2-R4, R6, R7, D5, Q1-Q4 and Q6 make up the 9 VAC generator, while D4, R5 and Q5 generate the +5 volt line.

B1 can be any rechargeable 12-volt battery. For up to 30 minutes of blackout protection, ten nicad D cells can be used. For longer protection a 12-volt gel cell is recommended. Gel cells are similar to the lead-acid storage battery, but use a gelled instead of liquid electrolyte. They are the best compromise between lead-acid and nicad because they are sealed, require zero maintenance, can be stored at any angle and have a higher current density than nicads. Check your local surplus store or electronics mail-order warehouse for stock.

When purchasing batteries, a good rule of thumb for this project is two amp/hours of capacity for every hour of desired backup.

The selection of R1 is dependent upon the capacity of the battery to be used. A charging rate of 2% of rated current capacity will allow the batteries to trickle charge continuously without damage. The formula is Vb/(AH/50). Illustrating with a 10 amp/hour gel cell, R1 would be:

$R1 = Vb/(AH/50)$

$R1 = 12/(10/50)$

$R1 = 12/0.2$

$R1 = 60$ Ohms

A charging resistor of at least 12 ohms is recommended to stay within the limitations of transformer T1.

D3 is the entire line/storage switchover circuit. D3 will conduct when the voltage at the cathode is 0.7 volts lower than the battery voltage and will automatically resume charging when the cathode of D3 rises above the 0.7 volt differential threshold. IC1 is a 555 timer oscillating at 60 Hz with a 50% duty cycle. Transistors Q1-Q4 are configured to produce an alternating current by turning on two opposing transistors at a time. Q1 and Q2 are configured as an SPDT switch. Q3 and Q4 are configured the same as Q1/Q2, but Q6 acts as a level inverter to allow the opposite transistor to turn on. When the output of IC1 is high, Q1 and Q4 turn on while Q2 and Q3 turn off, allowing current to pass in one direction between the 9 VAC terminals. When the output of IC1 is low, Q1 and Q4 turn off while Q2 and Q3 turn on, allowing current to flow in the other direction. The alternating current generated is a squarewave, but the Commodore 64 isn't too particular about the shape, so we can get away with it.

R5, D4 and Q5 form a series-pass regulator circuit. This configuration was chosen over the 7805 regulator because of the higher available current capacity. Since the 7805 in the original brick supply is run near full capacity at all times, it has a tendency to quit after too many all-night sessions. Q5 is rated at eight amps, 65 watts. This gross overrating allows not only a lot of extra juice if needed, but also makes a heatsink unnecessary.

## Making the Power Loss Powerless

Construction would be best handled on a PC board using Figure 3 for layout. Figure 2 is a wiring-side view of the 7-pin DIN plug. ***Be sure to check and recheck these connections!*** The last thing you need on power-up is to realize only too late that you reversed the polarity of the +5 volt DC line and fried every IC inside your computer. As always, socketing IC's is recommended. Desoldering and resoldering IC's is both a pain and detrimental to the health of the PCB traces. When selecting an enclosure for this project, look for one with circulation vents. Things will be getting pretty warm in there after a few hours.

Calibration and testing are relatively easy. Once the circuit is built, measure the +5 volt line and make sure it is within +/-10% of nominal. Set R4 to about 15 Kohms and measure the 9 VAC line voltage. If the AC generator is working perfectly, the output will read about 12 volts. The discrepancy between nominal and measured voltage lies with the voltmeter. AC voltmeters are designed to measure the RMS value of a wave. In the case of a sinewave (normal AC power), the RMS value is 70.7% of the peak value. In the case of a squarewave (what the circuit produces), the RMS value is equal to the peak value. The peak value of a 9 VAC RMS sinewave is about 12.7 volts, which explains how the computer can get 12 volts DC from 9 volts AC.

If you have an oscilloscope, connect it to the 9 VAC line and adjust R4 until a 60 Hz wave is output. Otherwise, plug the power supply into your computer and power up. Enter the program in Figure 4 to display the time-of-day clock to the screen and check it against a known clock. Adjust R4 until the clock is running at an accurate rate. Now close up the box and leave the power supply plugged in for about three days to allow B1 to charge. Using the computer during this time makes no difference. At the end of the charging period turn on the computer and unplug the UPS from the wall. If the computer continues to run, congratulations! Feel free to giggle uncontrollably at the Power Lords. Their grip, while not completely removed, no longer dictates when you will use your computer. Hey! With a little imagination and a 12-volt television for a monitor, you could go portable . . . ■

## Parts List

| | |
|---|---|
| B1: | 12-volt rechargeable battery pack (see text) |
| C1: | 4700 uF 16-volt capacitor |
| C2: | 1uF 16-volt capacitor |
| D1-D3: | 1N5400 3A 50 PIV rectifier diodes |
| D4: | 1N4690 5.6V 250mW zener diode |
| D5: | 1N4148 small signal diode (or equivalent) |
| F1: | 1A 250V fast blow fuse |
| IC1: | 555 timer |
| Q1, Q3, Q5: | TIP 120 NPN Darlington transistors |
| Q2, Q4: | TIP 125 PNP Darlington transistors |
| Q6: | 2N3906 small-signal PNP transistor |
| R1: | See text |
| R2, R3, R7: | 1Kohm 20% 1/4W resistor |
| R4: | 20 Kohm multiturn trimpot |
| R5: | 470 om 20% 1/4W resistor |
| R6: | 10Kohm 20% 1/4W resistor |
| S1: | SPST 12V 3A toggle switch |
| T1: | 18VCT 2A transformer |

**Miscellaneous:** project box, power cord, 7-pin DIN male connector, 8-pin DIP socket

```
READY.

100 PRINT"[CLR/HOME, DOWN 3] HIT ANY KEY TO RESET CLOCK"
110 TI$="000000"
120 PRINT"[HOME]";TAB(16);TI$
130 GETA$:IFA$="" THEN 120
140 GOTO 110
150 END

READY.
```

Listing

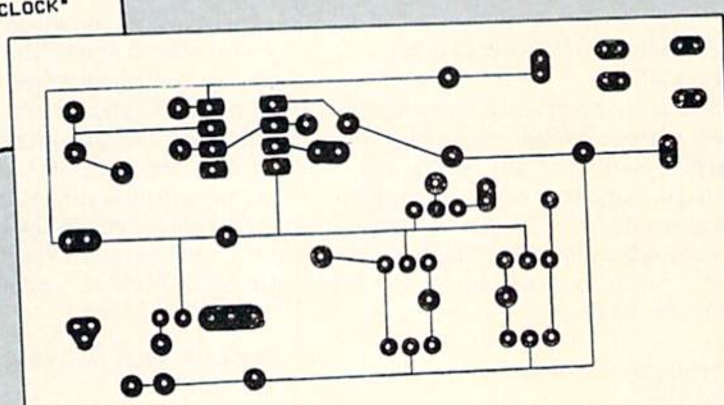


Figure 4: UPS P.C. Layout, Foil Side

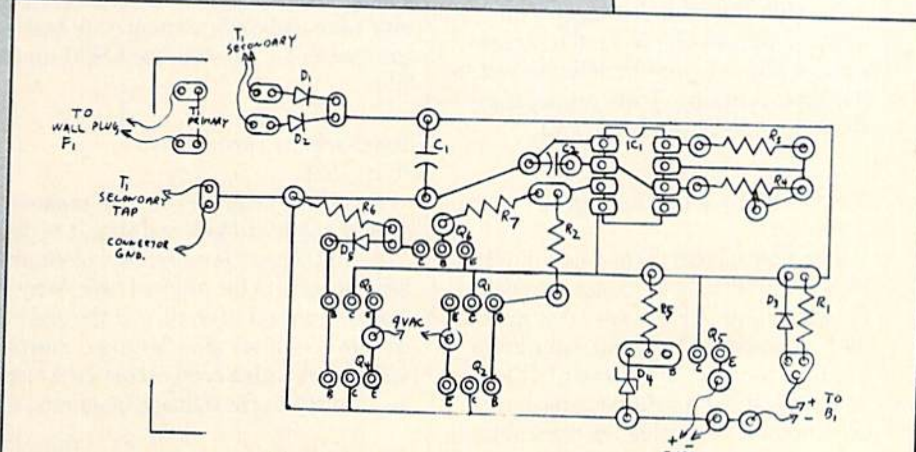
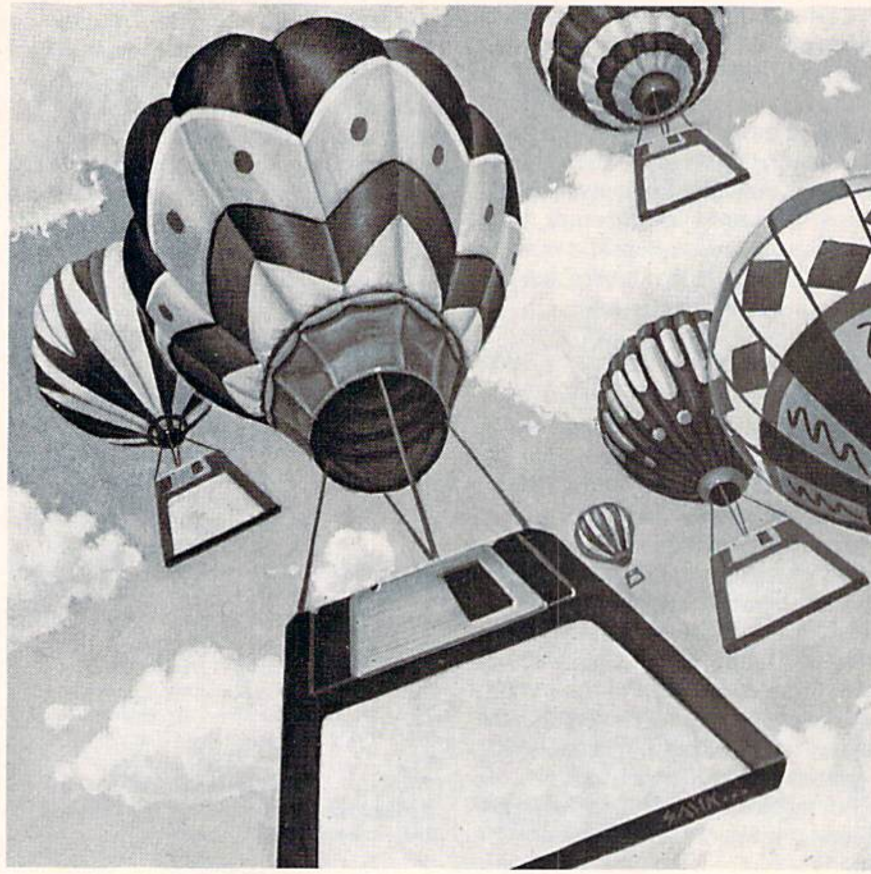



Figure 3: UPS P.C. Layout, Component Side

by Graham Kinsey

# Amiga Public Domain




This month I'll look at a very interesting set of new Fred Fish releases (disks 155 to 162). I also review several PD programs from the AmigaZone, but I couldn't get to all of them this month. This month's highlights include a program that backs up boot blocks, a new VT100 terminal program and dozens of utility programs.

For each program, the author is given when known, along with the Fish disk number where applicable. If I obtained a PD program directly from PeopleLink's AmigaZone, I list the AmigaZone download file number (if no file number is given the program may still be on PeopleLink, but I obtained it somewhere else). When a public domain program has been classified as shareware, this is also mentioned with the suggested amount.

Due to the size of animations coming out for the Amiga, you can assume that (unless otherwise noted) any Amiga animations reviewed here require one megabyte to run.

**NoSmoking:** by Theo Kermanidis (Fish 155)

This is an example of a recoverable alert (which is basically a Guru-style warning but is not fatal). NoSmoking gives you a personal health message using a recoverable alert. C source code is included, so those who program in C can quickly alter the code to display any message they want.

**Scenery:** by Brett Casebolt (Fish 155)

This program generates multi-colored images of mountains with an optional surrounding body of water. The landscape is also covered with varying densities of vegetation. Since it was written in assembly language, it chews up very little time (only a couple of minutes), yet it still produces pleasing results. You can change variables including the level of the water, the height of the mountains, the direction the light source comes from and the view angle. Generated images can be saved as an IFF file, but there is no way to load in previously-generated images for modification.

**OOPS!:** by Joerg Anslik (Fish 156)

OOPS! allows you to add some color to the Workbench screen. The program simply modifies the copper list so that the plain blue Workbench color is transformed into a colorful set of blue strips of different intensities. Please note that there is no way to reverse this. Other screens are not effected by OOPS!, unless the screen has been dragged down and part of the Workbench screen is exposed.

**60or80:** by Mark Schretlen (Fish 157)

A simple program that toggles the 60/80 column setting on Preferences, so you don't have to load Preferences just to change this setting. There are separate versions for Workbench and CLI.

**AmicForm:** by John Motsinger (Fish 157)

If you use Chet Solace's The Final List BBS listing strictly in conjunction with PC-Pursuit, AmicForm will trim most of the "fat" out of TFL for you. AmicForm will take as input any standard TFL edition and spit out a reduced version that only contains BBS's that are reachable via PC-Pursuit. *Note:* When running this program (using the October 1988 edition of TFL as input), the program appeared to internally lock up and not complete its task. No Guru appeared as a result of this.

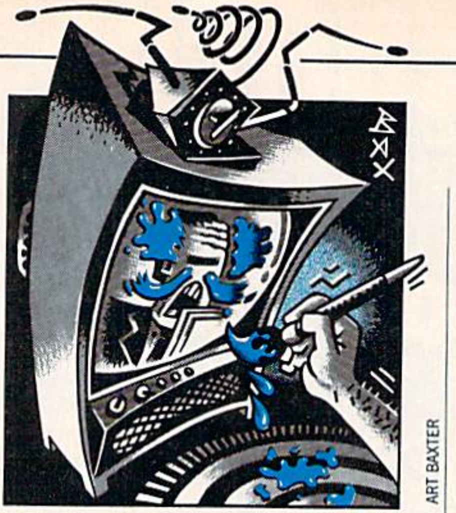
**AnimBalls:** by Jim Guliford (Fish 157)

AnimBalls is a program that will allow you to rotate balls of various colors and sizes in three dimensions. The mouse is used for all rotation control, and there are keys that can be used to change the axis of rotation as well as the speed of rotation. The graphics are done in HAM mode (although there is a gray-scale option). The size, color and configuration of all ball sets are specified via a separate ASCII input file.

**Bootback:** by David Joiner (Fish 157)

A no-frills program that will make a copy of any boot block and save it to disk. You can then retrieve the boot block and write it back to the original disk. Why would you want to do this? If the disk's custom boot block gets destroyed due to a virus, then with a copy of that boot block, you can repair the damage (assuming of

*Continued on page 115*



ART BAXTER

by Matthew Leeds

# The Amiga—Quite a Character

The Amiga has found a remarkable degree of success in the professional video market. Cable television stations, post-production studios, industrial media departments, and independent video producers have all found the Amiga to be a cost-effective alternative to expensive dedicated video hardware. Perhaps one of the most popular uses for the Amiga in professional video is as a character generator.

At the most basic level a character generator is a titling device. It is used to add text to a videotaped production either during a live recording or in a post-production environment. As you move up the scale of sophistication, character generators are also capable of animation effects, background images, anti-aliased characters, multiple fonts with drop shadows and edges, special effect wipes, rolls and fades, and other flashy touches.

Since there is such a great range in functionality among character generators, it is difficult to arrive at a standard with which to rate systems. Comparisons to recognized brand names seems to be the scale that Amiga applications are currently being measured by, and the most recognized brand name in character-generation systems is Chyron. Chyron markets a variety of systems with differences in functionality and price.

The base Chyron system is the VP-1. This system requires the addition of a computer to input text via an RS-232 interface. Just up from the VP-1 is the VP-2, a stand-alone system. Let's take a quick look at a list of some of it's features, analyze what they are, and then look at creating an Amiga based equivalent system.

Chyron VP-2 Features:
- 35 Nanosecond Resolution
- Font Library
- 512 Color Selection
- Palette Animation
- Variable Rolls
- Encoder with Sync and Genlock
- Custom Font/Logo Compose Service

**Resolution**—In the video world, resolution is often measured in nanoseconds. Since video is essentially an analog medium, resolution measurements like 320×200 or 640×400 don't apply. Video has a fixed vertical resolution of 525 lines per frame, but its horizontal resolution is variable. According to the NTSC standard, each horizontal line should take 63.5 microseconds to draw. One measure of resolution is how quickly you can make changes on that horizontal line (called a raster). Changes at 35 nsec are roughly equivalent to a horizontal pixel resolution of 1500, or about double that of an Amiga running in interlaced overscan hi-res. This amount of resolution is not displayable on a broadcast image, but comes in handy in doing anti-aliasing (more on that later).

**Font Library**—The VP-2 has an option called Multifont. This makes up to six typefaces in six sizes available at one time. Chyron makes around 150 size/style variations available. The Amiga provides seven fonts and sixteen size/style variations. Third party fonts in mono- and multi-color combinations are available in hundreds of sizes and styles.

**Color Selection**—The VP-2 has a palette of 512 colors. It can display up to sixteen colors on the screen at one time. The Amiga has a color palette of 4096 colors and can also display sixteen colors on the screen at once. There are ways to display more colors, including using low-res interlaced, HAM interlaced, and a new video titling program may offer several hundred colors on-screen in hi-res (see below).

**Palette Animation**—The VP-2 can cycle selectable colors in characters or backgrounds at operator-variable rates. Most Amiga graphics applications offer color cycling with up to four separate color cycling sets, rates and directions.

**Variable Rolls**—The VP-2 offers only a roll transition. The rate of transition can be varied and can be pre-programmed to auto display or manually cued. Amiga titling and effects applications offer wipes, pushes, fades, spirals, dissolves and other transition effects.

**Encoder with Sync and Genlock**—The Amiga 1000 offered NTSC color output. The 500 and 2000 require the addition of an encoder. A number of third-party manufacturers as well as Commodore offer genlock/encoder combinations for both the 500 and the 2000. Most Amiga genlocks also offer some type of overlay or keying of graphics on video. Several also offer downstream keying, important in a post-production environment.

**Custom Font/Logo Compose Service**—Chyron offers end users an after-purchase service that will create custom fonts and logos. This, of course, is for an additional fee. Amiga applications are available for the creation of custom fonts. Logos can either be created using paint programs or captured via a video digitizer.

As you can see, the Amiga compares very favorably to a basic Chyron character-generator system. Of course, Chyron offers more sophisticated systems with additional features, but their prices quickly exceed $10,000. You can easily put together an excellent Amiga system that will fulfill far more than the basic needs of a character generator for less than a base priced VP-2.

There are other issues involved in evaluating character-generation systems. The quality of the fonts used, the options offered in rendering fonts (drop shadows, edging, italics, anti-aliasing), the type and number of transition effects, the ease of use of the user interface, and the speed with which the entire system can be used are all factors to be carefully examined.

Anti-aliasing is important in eliminating the stair-stepped look sometimes called "jaggies" that occurs in diagonals and curved edges. Anti-aliasing blends the color and intensity of the foreground character with the background. The number of steps between the foreground and background are critical in creating a smooth-edged character. This number is controlled by both the number of colors and/or intensities available and the resolution of the system.

*Continued on page 102*




# BUY A COMMODORE OR COMMODORE-AMIGA COMPUTER, AND AUTOMATICALLY RECEIVE OUR LATEST BUYERS GUIDE

Each issue the product submissions continue to grow as more and more peripherals and software are becoming available. The solid citizen 64 and 128D as well as the innovative Amiga 500 and 2000 attract all the best developers. You cannot afford to miss out on using your Commodore computer to its fullest potential with all the tools advertised in these guides.

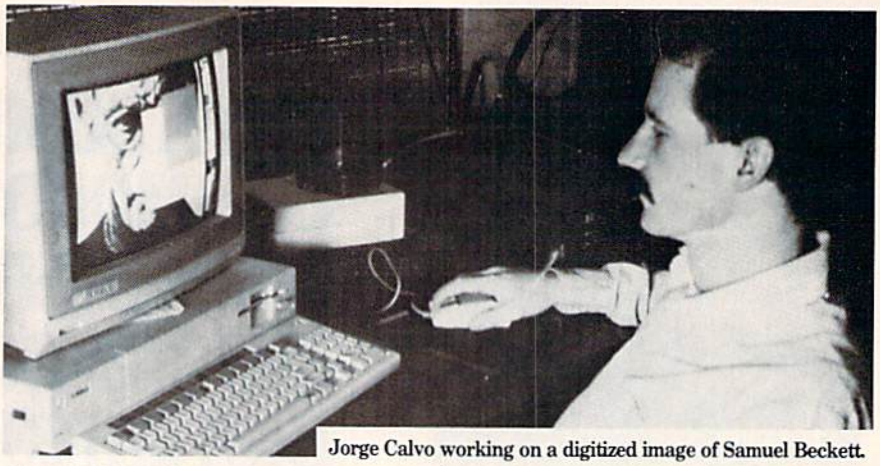
Commodore
M A G A Z I N E

**The Commodore and Commodore Amiga Buyers' Guides are published under the auspices of Commodore Magazine.**

by Barb Rosenberg

# Amiga Animates Beckett

**What can you do when you don't have the moving pictures to assemble a documentary? Get a little help from Amiga. Here's an inside look at how computer graphics filled a video void.**



Jorge Calvo working on a digitized image of Samuel Beckett.

Samuel Beckett, the world-acclaimed playwright and Nobel Prize-winning novelist, is the subject of an exciting television documentary about his life and work. The documentary, intended for broadcast on PBS, will be as innovative in its way as Beckett was when he wrote such enigmatic works as *Waiting for Godot*, *Endgame* and *Krapp's Last Tape*.

There has been, however, one major problem in putting together a documentary about the man: because of a passion for privacy, Beckett has never willingly allowed himself to be filmed or videotaped. With the exception of a single 17-second film segment shot without Beckett's knowledge by a BBC cameraman, the only records of his life have been taken with still cameras, which, strangely enough, he doesn't seem to mind.

John L. Reilly, who conceived and is producing the program, wasn't comfortable about the prospect of trying to make an entire documentary consisting solely of still photographs. Fortunately, Reilly—the executive director of Global Village, a video production studio and school—is as experimental with video production as Beckett is with the written word. Devising an appropriate vehicle to portray Beckett's essence was just the kind of challenge he found intriguing.

While Reilly was mulling over various possibilities, fate intervened and brought Jorge ("Jordie") Calvo all the way from his native Spain to work at Global Village, and ultimately with Reilly. Calvo—psychologist, architect and computer graphics artist—was told by a friend about an Amiga at Global Village that no one was currently using. It was just the opportunity Calvo needed; he had read about the graphic capabilities of the Amiga and wanted a chance to see for himself just what the machine could do.

As Calvo experimented, he became fascinated with the Amiga—a machine more sophisticated than anything he'd ever used or been exposed to. Calvo began to videotape pictures and photographs, and using a digitizer and genlock, he taught himself to synchronize the video output of the computer to mix still shots and drawings with the videotaped material. "I was able to get as close as possible to broadcast graphics without the involved circuitry," Calvo says. "Whereas a broadcast-quality machine can cost almost half a million dollars, the Amiga can come very, very close—and at a fraction of the price."

With his digitizer plugged into the Amiga, Calvo connected his Sony Video 8 camera and experimented with various techniques to achieve the effects he was looking for. By moving the camera more quickly across the photos than the 20–25 seconds a digitizer requires to "read" them, Calvo found that he could create a mysterious, "otherworldly" effect for the still shots. "I wanted to reach for the 'inner space' of the photographs," says Calvo, "before doing any color 'touch up' to enhance their quality."

When Calvo showed the results of his experimentation to Reilly, he was immediately invited to take part in the Beckett project. Under Reilly's direction, his media center, Global Village, has won acclaim repeatedly for its avant garde presentations, including *What Where*, one of Beckett's more recent plays. It was only after Beckett saw examples of how Reilly treated his plays in video production that he consented to Reilly's documentary proposal.

"Quite typically," Reilly continues, "and, very much in keeping with his personal style, Beckett never actually said yes or no when we went to Paris and asked him about the possibility of making the documentary. He just went on talking and discussing some of the things that might be relevant . . . which is, if you know him, the only way he ever consents to anything."

"He's a very private man," says Reilly about Beckett, "very modest." So private, as a matter of fact, that when he was awarded the Nobel Prize for literature he didn't even travel to Stockholm to accept the prize, but sent his publisher instead.

With only still photographs to work with, Reilly was faced with a daunting problem: how was he going to create a production worthy of Beckett with so little material to build on?

After he learned from Reilly about these limitations, Calvo toyed with the idea of using various renditions of Beckett's face in many shapes, sizes and colors as a means of illustrating and enlivening the video production. Using *The Director* (from the Right Answers Group) he programmed the Amiga to follow his exact instructions: to fade the image in and out; to wipe them; to do script-based animation . . . wrap the face around a cylinder or distort it even further in order to achieve more exciting effects. He was elated when he discovered MicroIllusions' *Photon Paint*, which enabled him to work in HAM (Hold and Modify) mode with more subtle coloration and the look of 3D.

On one of his visits to Paris, Reilly unfolded his idea of using Amiga-generated graphics in the video production. Beckett seemed to be intrigued with the idea. At least he didn't say no, which, as Reilly knew from previous experience, was tantamount to Beckett's giving assent.

The video techniques used in the Beckett documentary have evolved in the past 19 years since Reilly founded Global Village in Soho, an area of artists' studios, fashionable galleries, boutiques and trendy restaurants. After earning his Master's degree at New York University Reilly started his career as a film maker.

"But personally, I was always frustrated by the time it took to process the film," he says. So in 1969 he and a colleague, Rudi Stern, founded Global Village to begin experimenting with video.

"It was the fast 'get back' and editing that we found so appealing," Reilly recalls. "And we could show people immediately what it was that we were working with. Video is such a plastic medium. It's wonderful to experiment with for all kinds of special effects."

Reilly and Stern worked together for three years at Global Village making non-traditional video productions, primarily documentaries. (Reilly still makes documentaries—he has just completed one about Central America for PBS.)

Two years after Reilly and Stern founded Global Village, they became affiliated with The New School, a highly respected avant-garde adult education facility. Global Village still conducts classes in videotaping for The New School, using both traditional and non-traditional techniques. Global Village enrolls students in its own specialized courses as well. One such course teaches computer graphics to people who already own an Amiga, or to people who want to learn applications before they buy one.

Jordie Calvo, the specialist who designed the documentary effects, teaches in one of the studio production courses, using the Amiga. "With the Amiga, you can create all kinds of wonderful effects," he says in a soft Castillian-accented voice. "You can be your own Stephen Spielberg."

Calvo demonstrates the Amiga's application to the Beckett production when he highlights a portion of Beckett's face, washes it with a tint, highlights it with yet another tint, and moves it to another part of the screen. Just for fun, he draws some large spectacles on the bridge of Beckett's nose. Then he generates several images from the original and experiments with various color combinations to evoke different effects and moods.

"You can even create your own typeface for titles or subtitles . . . or you can use one of the stock typefaces that comes with the program," Calvo says. "Now, you can have a whole studio in your living room."

Calvo uses *DeluxePaint* a great deal for his ordinary work. "I had begun by using a more straightforward computer and played around with it . . . when I first tried the Amiga, it was the demo that baited me, and when I paired it with *DeluxePaint*, it really 'set the hook.'"

"I fooled around with cartoon figures for about a year," Calvo says. "I even used graphic representations of tension in order to help people overcome their problems with it." That was all before Reilly asked Calvo to work on the Beckett project.

"It would have been great," says Calvo, "to have been able to use some video footage of Beckett, but . . . seeing that he is such a reserved person, well . . . I guess we'll have to work with what we've got." Working with what they have means superimposing Beckett's face on a background of the playwright's beloved Paris as the "theme" for the documentary. It means anything else that Calvo, Reilly and the Amiga, working almost in symbiosis, can come up with.

Analyzing his subject from a psychological perspective, Calvo says of Beckett, "That man plays with people's consciousness when he writes. So he'll understand our Global Village interpretation of him.

"He'll be able to identify with what we're doing when we translate his face . . . when we fragment and reassemble it. Beckett will understand."

## The Beckett Mystique

In many ways, John Reilly's documentary, known in its working stages as *Waiting for Beckett,* is the culmination of many years of hero worship. Reilly became fascinated with Beckett when he first saw the 1961 television production of Beckett's masterpiece, *Waiting for Godot,* starring Zero Mostel and Burgess Meredith.

A few years ago, driven by the idea of working with Beckett, Reilly videotaped a production of *Krapp's Last Tape.* With the help and encouragement of Beckett's close friend and American agent/publisher, Barney Rosset, he arranged for a meeting in Paris to show Beckett the production. Reilly also presented his idea of making a documentary based on Beckett's life and work. Beckett responded by giving him names of people he could talk to in order to get information—information that Beckett wasn't about to give himself. Beyond these contacts, he would not assist the project at all. Beckett actually seemed puzzled, Reilly says, about why there was so much interest in him—enough interest for someone to do a documentary. Reilly reminded him that 1.5 million people had bought copies of *Waiting for Godot,*—certainly a powerful indication of interest.

Reilly notes that in spite of Beckett's intense need for privacy, he has, strangely enough, many friends "on a one to one basis." And, according to Reilly, it was while Beckett was walking with some of those friends (including James Joyce) in 1938, that an episode occurred which gives poignant insight into Beckett's character and later work.


Digitized image of Samuel Beckett.

Beckett has never willingly allowed himself to be filmed or videotaped.

As they were strolling on a street not far from where Beckett lived, a beggar approached the men and asked for money. When Beckett turned to give him some change, the beggar pulled out a knife and stabbed him. After Beckett got out of the hospital he went to visit the beggar in jail. "Why did you do it?" Beckett asked. "*Je ne sais pas,*" ("I don't know") the beggar replied. And that answer—"I don't know"—was an important revelation to Beckett, who realized that the man truly didn't know. That concept of "I don't know" became an important theme in Beckett's later work. According to Reilly, Beckett never offers any sort of explantion for his own work and actions.

So understandably, Beckett never asked Reilly for any details of how Reilly planned to document his life and work. "He never asked," says Reilly, "and I never told him."

Beckett was intrigued, however, with the computer-generated graphics he had seen when Reilly showed him his video production of *What Where,* a production featuring an Amiga-generated spectral image along with free-floating talking heads. The juxtaposition of these images on a stark black screen creates a powerful sense of drama as the characters speak their lines.

But Beckett has not asked to see Reilly's documentary, and in keeping with the nature of their relationship, Reilly has not volunteered to show it to him. The fact that Beckett expressed his enthusiasm for the *What Where* computer-generated graphics augurs well for his reaction to their use in displaying various planes and facets of his face in the documentary. ■

by Mark Jordan

# Pumping GEOS with Brian Dougherty

**Berkeley Softworks' series of GEOS-compatible products opens up a world of opportunity to Commodore users. Take some tips from Mark Jordan and soon you too will be Pumping GEOS.**

This time we're going to take a break from our normal routine. Instead of pumping GEOS we're going to pump the brain of the man who invented GEOS, Brian Dougherty. The interview that follows took place early in October 1988. One note: Mr. Dougherty often refers to GEOS applications without the "geo" prefix. So don't be confused at the mention of *Paint* or *Write* or *Publish.*

**Mark Jordan:** I've been working with GEOS 2.0 for several months now and I like it. I reported in an earlier column that every active GEOS user should get it. It's your turn to tell my readers why they should upgrade.
**Brian Dougherty:** I don't know if you remember what it was like working with version 1.3 of *Write,* but it lacked many features. It was slow, you couldn't format paragraphs, there was no search and replace, no headers or footers, no justification, only one-line spacing allowed. We fixed all the shortcomings of the original *Write* with *Writer's Workshop*, but we had to sell it as a separate package, partly because of our bundling agreement with Commodore.

After doing some research, we discovered that about half of the original GEOS users had never upgraded to *Writer's Workshop* (version 2.1). These users thought that the finer word processing features just couldn't fit in with a graphics environment, so they never got heavily into the environment because the word processor just didn't meet their needs.

So we decided to put *Write 2.1* in with GEOS 2.0. This alone is a good reason for many people to upgrade.
**Jordan:** What I like most about GEOS 2.0, and it's a small thing, is its capability



Brian Dougherty

to let you fine-tune your pixel cursor with cursor keys, a pixel at a time.
**Dougherty:** Believe me, that comes as a result of my actually working with the product. So many times I need to get on a pixel, and it's a real pain to try to do it with the mouse. We implemented that feature first on *Publish,* and I got so used to it that I just couldn't stand to be without it in *Paint.*
**Jordan:** So you use GEOS in your work?
**Dougherty:** I have all my business on a 128 hooked up to a Laser Writer.
**Jordan:** Now for what I wish you had put in version 2.0. First, I wish you had it so drawing could be done only when the button is pressed down instead of clicking the drawing mode on or off.
**Dougherty:** In retrospect it probably would've been good to add that as an option. But there was a reason for doing it the way we did. Actually, there were two reasons. First, we had hired a graphic artist from Commodore to work with *Paint.* She worked so much with *Paint* that her thumb and index finger got tired holding the button down.

The other reason is that when we were first coming out with GEOS, there wasn't a 1351 mouse on the market like there is now. There was the 1350 which was not a true proportional mouse. We actually went to Commodore and got them to do the 1351.

So when we first came out we were looking at a joystick as the primary input device. We were trying to implement a lot of things like the Mac had, such as the method of drawing you want. But there was a problem with the joystick buttons: they had unreliable switch contacts at maintaining continuity. So you would be holding the button down, but it would be jumping in and out of the drawing mode. Also, the contacts would get dirty, and the problem would be exaggerated more.
**Jordan:** Since you mentioned the Macintosh, let me ask you why there's nothing like the lasso function that *MacPaint* has. You know, where you can move irregularly-shaped sections of the screen.
**Dougherty:** That was something we played around with. But it's a complicated algorithm. As it was, we really had to squeeze to get in the things we did on version 2.0. Remember, we were working with a 64K machine.
**Jordan:** Right. Lots of times we in the user community have big opinions on what should have been done with a piece of software without understanding all of the factors involved. So let me give you one of my big opinions: I want fonts to be accessible from the second drive. It's not only a pain to have to load them each time onto your work disk, but if you're using a 1541, sometimes you can't even get all the fonts you want plus the applications, etc., on the same disk.
**Dougherty:** If you want to do power *geoPublishing* you need a 1571. The reason you can't access fonts from the other disk has to do with how all GEOS applications work. Whenever you run an application, it checks the disk and builds a font menu. If you were allowed to have fonts on the other drive, since you're allowed to change your data disk, you'd get into a problem if the data disk were pulled out—all the fonts would be different. It would require a lot of housekeeping.

Until *Publish* came out, this wasn't really a big problem. But with *Publish,* yes, you do run up against some practical limits.
**Jordan:** One of the ways I get around font limitations is to use the *Paint* drivers to convert files into *geoPaint* files with fonts already frozen in place. Then I can use different fonts on top of them.
**Dougherty:** We had people using the

*Continued on page 109*

Pumping GEOS

Vol. 1, Num 6

# Using a 1764 with a 128

## Or "A Safe Way to Test Equipment" (with a little help from my friends)

With the low supply of 1750 REUs, some of you, like me, may have been wondering, is there any possibility of using a 1764 REU with a 128? The owner's manual from the 1764 states on page 3, "Remember, the 1764 was designed only for the 64, and can NOT be used with the Commodore 128." Cautious computer users like myself are a bit hesitant to stick a 1764 into the back of the machine and turn it on after reading a warning such as this.

Well, I figured out a way to test out a 128 with a 1764 with no risk at all to my equipment. Below is a blow-by-blow account of how I, with the help of an old friend, did it.

*     *     *

Me: Hey, Rand, ol' buddy, how's it going?
Randy: What's the favor?
Me: Randy, my man, it hurts me to hear you talk like that. But since you brought the matter up, I do have a slight request.
Randy: The answer is **NO**.
Me: C'mon, guy. You haven't even heard it.
Randy: I'm better off that way.
Me: Listen, you know that 1764 REU that Dave had . . . the one you **r-e-e-e-a-l-l-y** wanted to see?
Randy: (wavering) What of it?
Me: I got it. I traded him my old Remington chainsaw for it.
Randy: (laughing) The one with the warped bar that smoked?
Me: That's the one.
Randy: (sudden suspicious tone) Well, what of it?
Me: Let's try it out.
Randy: Okay, I'll be right over.
Me: Er, I can't try it on ***my*** 128. We'll need to try it on ***your*** 128.
Randy: Why mine?
Me: Mine's, uh . . . broken.
Randy: Since when?
Me: Since . . . yesterday.
Randy: I don't believe you.
Me: Look, wouldn't I know if my own computer was on the fritz?
Randy: Well, I guess so. But didn't you tell me that the 1764 wasn't supposed to work with the 128?
Me: Oh, that. That's just one of those meaningless warnings the government forces manufacturers to put on things. You know, like mattress stickers. Trust me, the worst that can happen is that it just won't work.
Randy: Are you sure?
Me: Of course. Listen, it comes with a demo disk that they say has animations that will blow you away.
Randy: Well, okay. Come on over and we'll give 'er a test drive.
Me: That's the spirit. I'll be over as soon as I finish up the article I'm working on.
Randy: You're doing it on a ***typewriter?!***
Me: What? Of course not, I'm using my 128 -- er, I mean, I've been typing since 1:28 this afternoon. What a drag.
Randy: I don't trust you.
Me: It hurts me, Randy, to see how cynical you've become. I'll be right over. You won't regret it.

*     *     *

The 1764 worked flawlessly and has ever since. And by the way, my computer mysteriously began working as soon as I got back home. It was my lucky day, I guess.

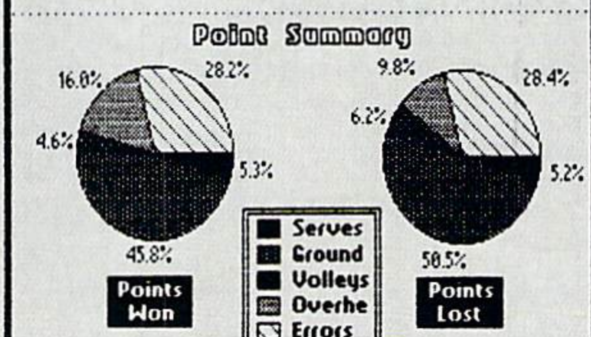
### Hot off the Press

## geoChart

I just received a beta test copy of a new GEOS application, geoChart. Its release is expected for November '88 (so it should be out by now) at a suggested retail price of $29.95.

While I haven't had a great deal of time to experiment with it, I did find that I could create charts with hardly any effort. One of the nicest features of this application is that you can use data from any GEOS application that deals with data, including geoWrite, geoFile, geoCalc, and the Notepad, which I used to create these tennis charts.

Features include: 9 different chart types, 32 fill patterns, ability to change fonts and styles, save charts in photo or text albums or as Write or Paint documents, plus a whole lot of sophisticated graphing features which we'll examine in detail in a future column.



# BUZZWORDS

Collected by John Jermaine

Compiled by Phillip A. Keller

## The Commodore Guide to Programmers' Slang

Over the last few years, a new language has emerged within the microcomputer software industry. I thought it might be fun to gather these terms together, in the form of a dictionary. A number of companies have contributed to this project, and everyone seemed to enjoy doing it.

:-) ;-) Electronic smiles. Denote humor or sarcasm. [CATS]

**Ad DOSeum** *(adj)* The feeling you get when working with a misbehaving (or ridiculous) operating system. [Art].

**Algorithymically Generated Self-Modifying Code** *(n)* A program that rewrites itself while running. [Epyx]

**Amigoid** *(n)* Nickname for dedicated Amiga Hackers. [CATS]

**Archival Backup** *(n)* Software a Leech has borrowed. [Epyx]

**Arthritis** *(n)* The infliction a mouse gets when its rollers are dirty. [Micro]

**B/Xen** *(n)* Nickname for people using B/X. [CATS]

**Balloonian variable** *(n)* Any variable that doesn't do anything but is required to run the program. [Intra]

**Baudbarf** *(n)* Any garbage characters sent across a terminal as a result of a disconnect. Usually seen when you logoff a system using a modem. [Art]

**Bit Bucket** *(n)* This is where overwritten data goes. [Intra]

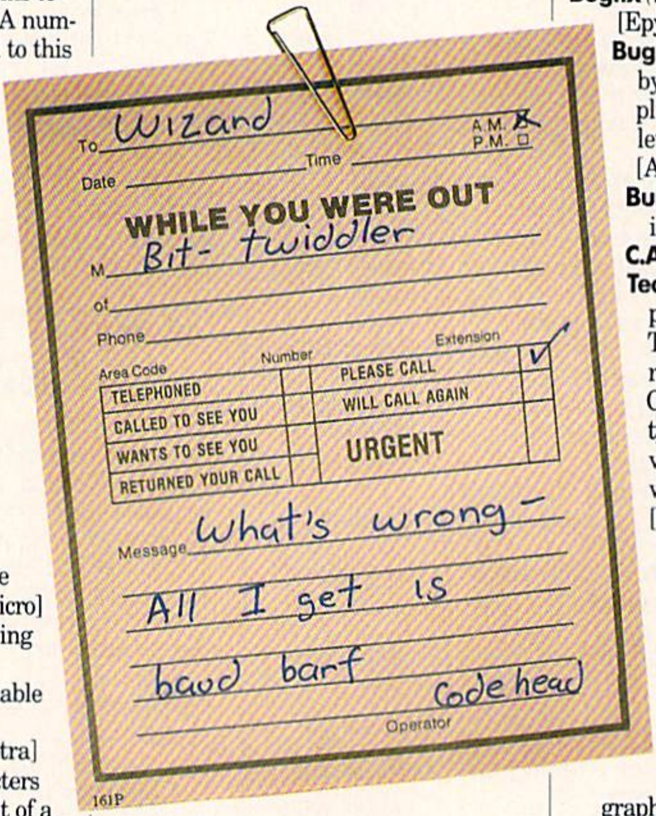
**Bit-twiddler** *(n)* Hacker. [BSW]

**Blitter** *(n)* Block transferor. [Epyx]

**Bodysurf code** *(n)* A subroutine written quickly in the heat of artistic inspiration, without benefit of flowcharts or deep thought. Like the activity, when actually performed, the result usually is a wipeout (e.g., a program crash) that results in the programmer eating sand. [Av/H]

**Boilerplate** *(adj, n, from newspaper publishing)* A series of games in which the programmer obviously reused subroutines. [Av/H]

**Boobugs** *(n)* Bugs that are detected (jump out at you) while you are looking for a completely different bug. [Art]




**Contributor's Code**

| | |
|---|---|
| [Art] | Artworx Software |
| [Av/H] | Avalon Hill Game Co. |
| [BSW] | Berkeley Softworks |
| [CATS] | Commodore/Amiga Technical Support |
| [Disc] | Discovery Software |
| [Epyx] | Epyx |
| [Game] | Gamestar |
| [Info] | Infocom |
| [Intra] | Intracorp Inc. |
| [Iplay] | Interplay Productions |
| [Micro] | MicroIllusions |
| [Origin] | Origin |
| [SSI] | Strategic Simulations, Inc. |

**BSW engineer** *(n)* A sophisticated carbon-based machine designed to turn coffee into productivity software. [BSW]

**Bugfix** *(n)* A large patch or workaround. [Epyx]

**Buglette(s)** *(n)* A bug or bugs created by fixing a known bug. Sometimes plural as in "I created several buglettes when I fixed the problem." [Art]

**Bulletproof** *(adj)* A program which is free of bugs. [Av/H]

**C.A.T.S. (Commodore/Amiga Technical Support)** *(n)* A group of people with feline tendencies. They can be found in the far upper reaches of Commodore's West Chester facility. Their feline ability to see in the dark is especially valuable, as they tend to work well into the night chasing bugs. [CATS]

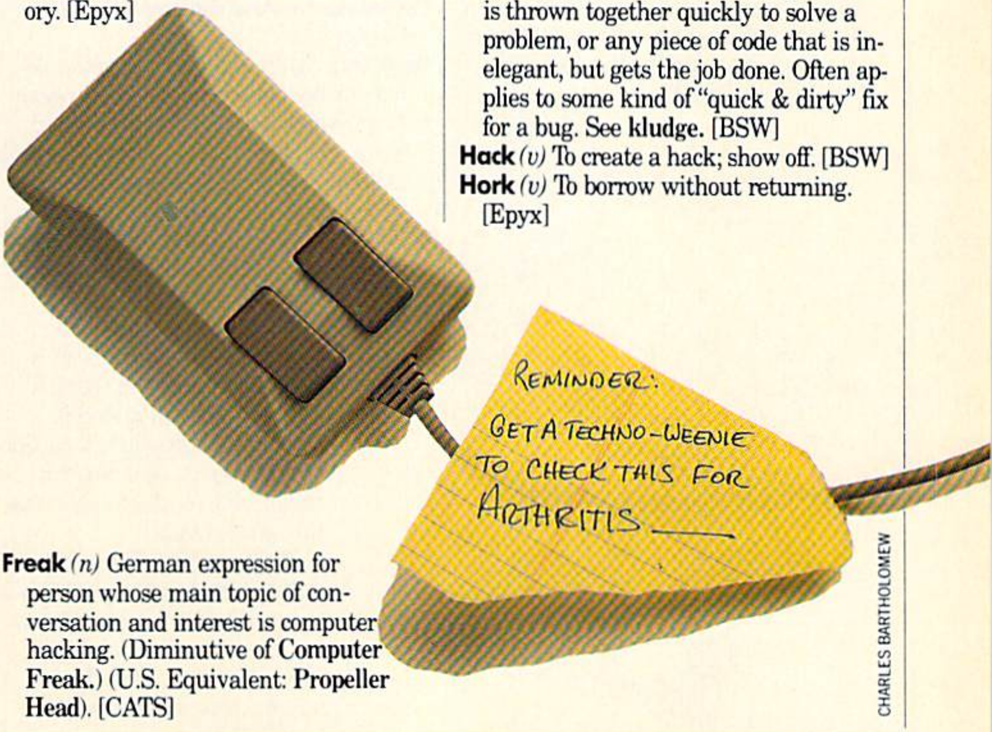
**Cablelexia** *(n)* A condition that keeps you from being able to connect a cable into a computer. Symptoms: Usually you look at the connector several times, but still fail to get it in right. [Art]

**Card** *(n)* An 8 × 8-pixel block on the Commodore hi-res graphics screen. The screen is composed of cards and each card occupies eight bytes in memory. [BSW]

**Cardinal ToolBox** *(n)* When the Apple Macintosh appeared on the scene, admiration for its developers soon evaporated when it became apparent that their devotion to doing things the right way (i.e., The Macintosh Way) went far beyond the bounds of reason. The term **Cardinal Toolbox** refers to the Mac way of doing anything, and it's still used today whenever blind slavish devotion to the Mac rears its head. Example: "Q. Can we use a fixed-width font in this window? A. No, **Cardinal Toolbox** won't allow it." (Note: **Cardinal Toolbox** is also the name of a character who appears in *Beyond Zork*.) [Info]

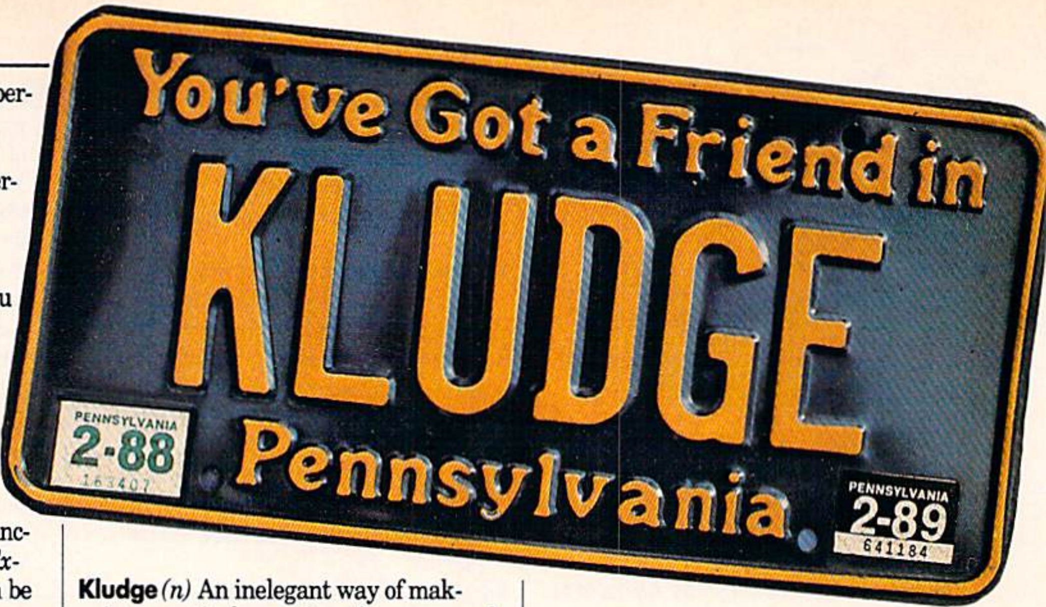


**CharityWare** *(n)* Like shareware, but money goes to a charity. [Epyx]
**Chicken Head** (also Chicken Lips) *(n)* Nickname for Commodore Logo. [CATS]
**Cleesh** *(v)* In *Enchanter,* this spell can be used to turn a person into a newt, and it's not uncommon to hear an Imp say "Will someone please **cleesh** the Marketoons?" [Info]
**CP/M** *(n)* The operating system used by Jerry Pournelle. [CATS]
**Code** *(n)* The program. [Epyx]
**Code** *(v)* To write a program. [Epyx]
**Codehead** *(n)* A programmer capable of writing code in machine language. [Av/H]
**Cosmic rays** *(n)* The factor of the universe that gets worse when near computer RAM chips; frequently used as an explanation for bugs when talking with a non-technical manager. [Intra]
**Cracked** *(adj)* When software is broken down by removing copy protection in order to make an archival backup. [Epyx]
**Crash and Burn** *(v)* When the computer undergoes a particularly phenomenal systems crash, generating aural and visual effects reminiscent of '60's psychedelia, that even a guru master couldn't duplicate on purpose. [Disc]
**Crunch Time** *(n)* The final hours of coding (non-stop) in order to meet a deadline. Often involves forsaking sleep. [Origin]
**Data structure** *(n)* A group of related data. [Epyx]
**Defensive programming** *(n)* A method of programming that anticipates the worst of all scenarios ("if anything can go wrong, it will") and combats this with overwhelming error checking. [BSW]
**Delta Compression** *(n)* A term used to describe a method of animation where each new "cell" or frame is described by its differences from the previous cell. [Epyx]
**Diration** *(n)* The time it takes for you to get a disk directory listing. [Art]
**Doc** *(n), pl.* **docs, dox** The documentation for a program. [Epyx]
**Doink** *(v)* 1) General verb used to indicate some sort of programming action. Example: "I have to **doink** this routine before this section is finished." 2) Used as a sign-off on memos, e-mail, etc. [Origin]
**Dorked** *(adj)* Destroyed or damaged. Differs from **munged,** which often implies that the damage was done for a purpose, whereas **dorked** implies that it was done by accident or through stupidity, as in "The machine is all **dorked** up." [BSW]
**Easter Egg** *(n)* Surprise message or picture hidden by the programmer and activated by less-than-obvious means. [Epyx]
**Edititis** *(n)* The mental confusion experienced by programmers who use more than three different text editors or word processors on a regular basis. [Micro]
**Export** *(v)* To store data in another program's format. [Epyx]
**Fireworks** *(n)* A variety of spectacular displays produced by trashing the Amiga copper lists. [CATS]
**Flakey** *(adj)* A descriptive term which helps QA [Quality Assurance] reproduce the exact problems you are experiencing. [CATS]
**Flame** *(n)* Electronic verbal assault. Often accentuated by CAPITAL LETTERS, punctuation!!!!! , and curses $_4$&%&*%%*&!!! [CATS]
**Floormat** *(n)* What you feel like when you format a disk that you shouldn't have. [Intra]
**Foamware** *(n)* Program in bubble memory. [Epyx]




**Freak** *(n)* German expression for person whose main topic of conversation and interest is computer hacking. (Diminutive of **Computer Freak.**) (U.S. Equivalent: **Propeller Head**). [CATS]
**Fred** (n) Most commonly-used name for testing on a computer due to proximity of letters on the keyboard. (Alternative: **Derf**) [CATS]
**Frob** *(n)* A word that can be substituted for any noun when the object in question has no name, the speaker can't remember it, or the term is too long to bother saying. During the early days, for example, Infocom shared a photocopy machine with another company in the same building. To use it, an Infocom person had to get a little box (from the office manager) and insert it into the machine. This would activate the photocopier and count the number of copies made. Lacking any better name, this box was called the **frob.** [Info]
**Gadgethacker** *(n)* Someone who likes to load and have running, many different "features" in an environment. For example, a clock, memory monitor, disk monitor, window shadow package, etc. The end result is an unusable Workbench. [Art]
**Gameplay** *(n)* Enjoyability or fun/quantity of a game. [Epyx]
**Geek-out** *(v)* What happens when a program crashes. [CATS]
**Glitz** *(n)* Screen gadgets and controls which are heavily decorated, or have an "eye candy" look. [Micro]
**Guncho** *(v)* It's the "Banish" spell in the *Enchanter* program that might be used this way in real life: "I worked late last night and **gunchoed** over fifty bugs." [Info]
**Hack** *(n)* A piece of code or a program that is thrown together quickly to solve a problem, or any piece of code that is inelegant, but gets the job done. Often applies to some kind of "quick & dirty" fix for a bug. See **kludge.** [BSW]
**Hack** *(v)* To create a hack; show off. [BSW]
**Hork** *(v)* To borrow without returning. [Epyx]

CHARLES BARTHOLOMEW




**Hyper-(anything)** Started with Hypercard. [Epyx]

**I.M.H.O. (In My Humble Opinion)** Used to denote prior remarks as personal opinion. Humorous after a pompous statement. [CATS]

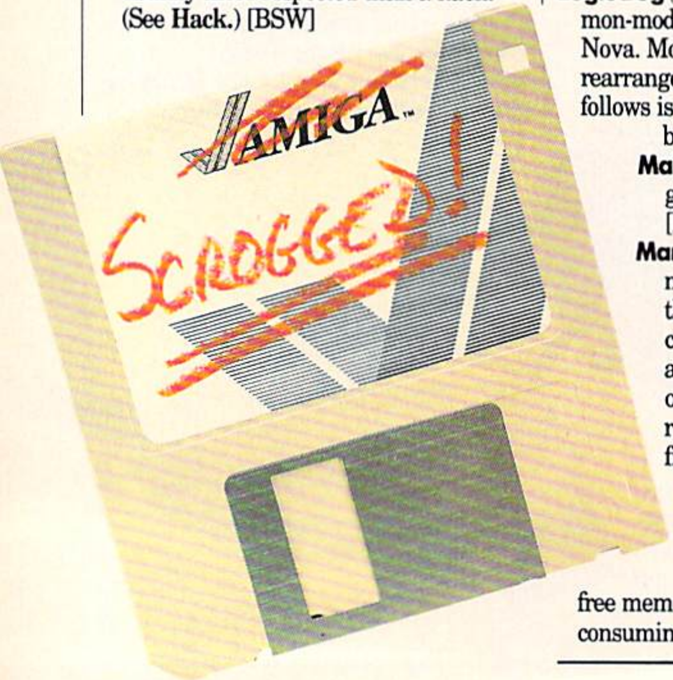
**Iconitis** *(n)* The condition of an icon-driven work environment when you can't find the icon you need. [Art]

**Imp** *(n)* Infocom game writers have always been referred to as "Implementors" (some insist on "Implementers"—the debate rages on). After a while, the term was shortened to **Imp,** which then covered both their game-writing functions and prankish personalities. *Example:* "Will this week's **Imp** lunch be held in the **Imp** suite, in the conference room, or at the expensive French restaurant in Harvard Square?" [Info]

**Import** *(v)* To load another program's data. [Epyx]

**Info** A prefix that can be added to the beginning of any word to denote a connection with Infocom. When used correctly, the first letter after the prefix is always capitalized. Some examples: "Friday parties are a long standing **InfoTradition.**" "Remember, Monday is an **InfoHoliday.**" "InfoPrez Joel Berez is fond of using **InfoMemos** to pass along **InfoInfo.**" Incidentally, Infocom's underground employee newspaper is called ***InfoDope.*** [Info]

**Kludge** *(n)* A clever programming trick. Often the term **kludge** is applied to a piece of code that achieves results through some obscure trick rather than through a clear algorithm. A **kludge** is usually more respected than a hack. (See **Hack.**) [BSW]




**Kludge** *(n)* An inelegant way of making a particular section of program code work. Often used to avoid restructuring large portions of previously-working code. [Origin]

**Kludge** *(n)* Quick-fix by using bad code. [Epyx]

**Lebler** *(n)* Someone who wanders around aimlessly, waiting for his game to be compiled. Mid-afternoon is a good time to see "cheerful" Dave Lebling **lebling** around the hallways or kitchen. A top-notch **lebler** is always seen nursing a cup of coffee. Example: "Yes, I just saw him—he was **lebling** over near Tim's office." While no one can hope to **leble** as well as Dave, virtually everyone who has to compile ends up **lebling** at one point during the day. **leble** *(v)* [Info]

**Leech** *(n)* A non-reciprocating borrower of software. [Epyx]

**Listpacker** *(n)* Another name for a Lisp Hacker. [Art]

**Logic Bug** *(n)* You can tlprt to lab in demon-mode & use time mach. to escape Nova. Move t.m. to next century and rearrange Nova ints. as follows—(what follows is an unreadable complex of boxes and arrows). [Info]

**Mainline** (n) Any part of a program that is not interrupt code. [Epyx]

**Manq** *(v)* from the Italian, to mangle. What happens when the programmers, in fixing a code module and saving it, accidentally overwrite a portion of the program that was not responsible for the crash in the first place. [Av/H]

**Megs** *(n)* Megabytes. [Epyx]

**Memeater** *(adj)* As in, "It's a memeater program." Any program that doesn't free memory allocations, thus slowly consuming free system memory. [Art]

**MIPS** *(n)* Millions of instructions per second. [Epyx]

**Mugger** *(n)* A user who pirates using only commercial software preset to automatically copy a specific program. [Av/H]

**Multiprocessing** *(n)* Two or more computers performing tasks concurrently.

**Multitasking** *(v)* Allows you to do twice as much work at half the speed. [Disc]

**Munge** *(v)* To destroy, convolute, obfuscate or render unusable, source code, object code, or program data, as in "I **munged** the file." [BSW]

**Neuronet** *(n)* Brain simulator. [Epyx]

**No-Bozo routine** *(n)* A subroutine that contains little error checking and expects a specific (usually complicated) set of parameters, and is therefore not for the inexperienced programmer or weak of heart. [BSW]

**Not doing well** What you say when you have a bug. [Intra]

**Nuke** *(v)* slang for deleted or commented out, as in "I **nuked** these two lines." [BSW]

**Ogre-Dokey** *(adj)* Origin Systems specific analog to "OK" (ref. *Ogre*). [Origin]

**Optimize** *(v)* Make a program or subroutine smaller, faster and more powerful. [Epyx]

**Over-the-Transom** *(adj, from book publishing)* An unsolicited computer game submission. Most companies frown on reviewing games without executing the proper forms. [Av/H]

**Paraquat debugger** *(n)* Method of solving the bugs by destroying the environment (typically a diskette, source code, etc.). [Intra]

**Parserspeak** *(v)* The practice (at Infocom) of using the responses from Infocom's interactive fiction parser in normal coversation.



Here's an example from a recent Imps' Lunch:

*Stu:* Steve, comma, pass me that bon-bon.

*Steve:* Which bon-bon do you mean, the yummy fresh bon-bon or the crufty melted bon-bon?

*Stu:* Yummy. [Info]

**Patch** *(n)* A temporary fix to a problem in a small portion of code. Often patches become permanent (Also see **kludge**). [Origin]

**Patch** *(n)* Usually a small piece of code designed to correct a bug or provide a needed feature.

**Piece of** (—) An over-used Activision term tacked on the front of any noun, as in "This **piece of** computer is broken" or "Pull up a **piece of** chair." [Info]



**Pixel Sort** *(n)* A compression routine where all the pixels are sorted by color, counted and reduced to a single number. (The decompression routine is left as an exercise for the user!) [Intra]

**Platform** *(n)* Generic term for computer. [Epyx]

**Poof** *(n)* The universal disclaimer. Roughly translates to "This is how it is, unless, of course, it's not." [CATS]

**Power-geek** *(n)* A programmer. [CATS]

**Printef** (usually **printeffing** or **printeffed**), *(v)* Using the C language PRINTF function to debug C programs. Usage: "I **printeffed** everything I could, but I still can't find the bug." [Art]

**Printereia** *(n)* Any garbage characters that get dumped to the printer when you turn it on or off, or exit or enter an editor. [Art]

**Prop-head** *(n)* A programmer (Diminutive of **Propeller Head**). [CATS]

**Pseudoregister** *(n)* any of the two-byte zero-page variables used in GEOS and GEOS applications to pass parameters and retain results. The GEOS registers are labeled r0 through r15. The application registers are labeled a0 through a15. [BSW]

**R.S.N. (Real Soon Now)** That's when you'll see something that's already six months late. [CATS]

**R.T.F.M.** Please Read the Manual ;-) [CATS]

**RAMmy** *(adj)* Condition caused by overindulgence in personal multitasking. Symptoms include refusal of patient to access additional brain cells, all tasks put to sleep and Guru Meditation messages flashing before the eyes. Most prevalent on Friday afternoons when the boss has been in the office all week. Treatment includes long weekends without the presence of phones or computers. [CATS]

**Rip Out** *(v)* Delete parts of [a program]. [Epyx]

**ROMable** *(adj)* Code that may be placed in ROM (or EPROM, etc.). ROMable code cannot be self-modifying. [BSW]

**Rose Bug** *(n)* When a Gamestar employee encounters a bug, it is sometimes called a **Rose Bug**. The group started using this term after working with Pete Rose on the *Pennant Fever* project. [Game]

**Runaway task** *(n)* What causes an Amiga program to **geek-out**. [CATS]

**Scrogged** *(adj)* When data is unretrievable, especially on a disk. "The disk is **scrogged.**" [Art]

**Self-modifying code** *(n)* A portion of a program that, as part of its normal course of operations, modifies itself to realize an increase in performance or a decrease in memory space. Extremely prone to bugs, self-modifying code is viewed as a necessary evil and should be used in moderation. [BSW]

**SIP** *(n)* Self-inflicted problem. [Intra]

**Skew, Slew** *(v)* To push or rotate slightly. Occurs in programming anything to represent three-dimensional objects on a two-dimensional plane. Usage: "This plane would look better if that wing were **slewed** over a bit." Note that the word **skew** also describes an object that is out of proportion or otherwise incorrectly drawn: "That B-17 is so **skewed** it looks like a dachshund with wings." [Av/H]

**Slushamatic** *(n)* A game which contains far more than the user has any right to expect. Frequently, this comes from a designer/programmer who knows that a machine such as the Commodore 64 can execute code as fast as any other home computer if it is well written. An extreme usage of the word is **super slushamatic.** [Av/H]

**Snotpit** May I have the pleasure of buying you lunch? [CATS]

**Spaghetti code** *(n)* A program or routine with a confusing, nonlinear and nonsensical organization, often exhibited by beginning programmers and lazy hackers. [BSW]

**Splat** *(v)* To update a portion of the screen as fast as possible. [Epyx]

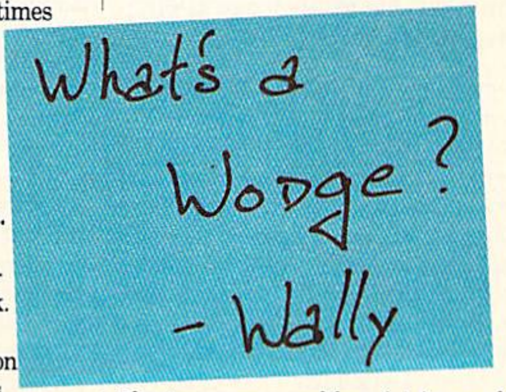
**Sugartime** *(n)* The time it takes to compile any large file. [Art]

**Table Top Publishing** (n) A step below Desktop Publishing. [Epyx]

**Tardyware** *(n)* Software that is released considerably later than expected or forecast (contrast with **Vaporware** below). [Micro]

**Techno-weenie** *(n)* A programmer or hardware designer. [CATS]

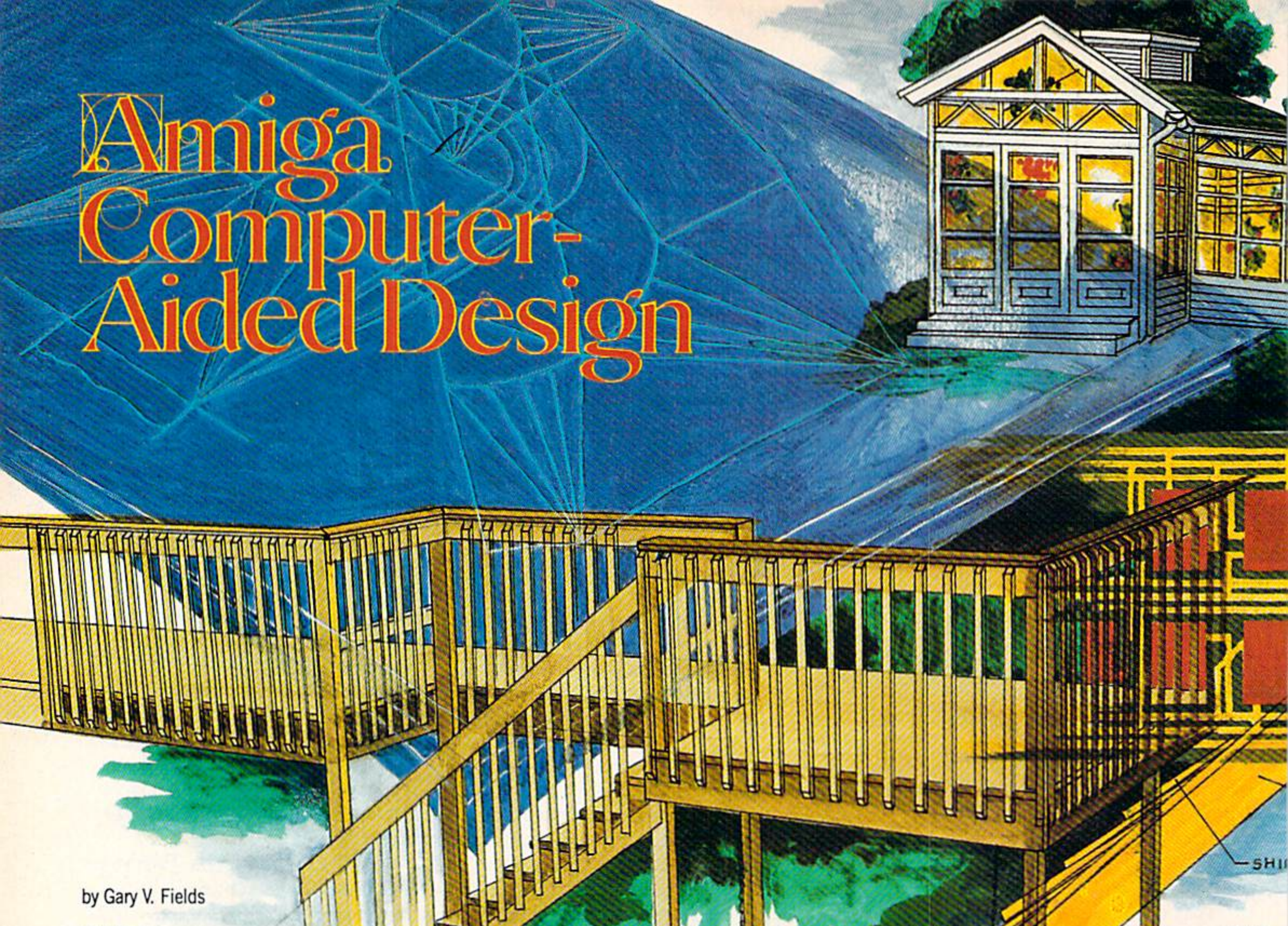
**That's Nice, I like it.** What you say when someone else has a bug. [Intra]




**The tomorrow problem** *(n)* Any problem that is insignificant compared to the amount of sleep that you need immediately. [Intra]

*Continued on page 104*

# Amiga Computer-Aided Design



by Gary V. Fields

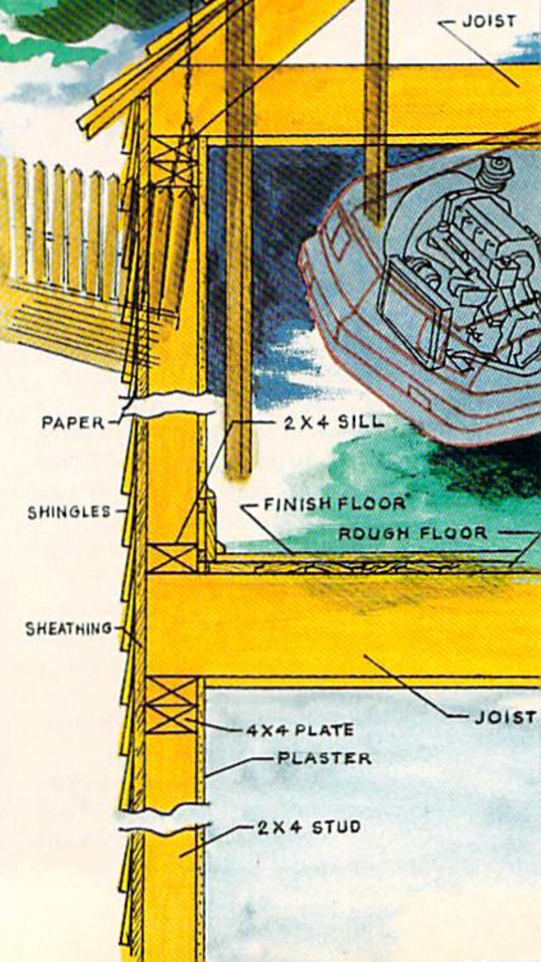
**CAD is an acronym for "Computer-Aided Design," thus, CAD programs are normally associated with professions which rely heavily upon detailed graphic images like architecture and engineering. But anyone with a need or desire for accurately-scaled drawings should consider adding a CAD program to their software library.**

The summer of 1967 found me sweating over a lengthy test in an oven-like classroom at the University of Tennessee. I was taking the required entrance exam for the school's six-year architectural program. My heart was set on becoming an architect, and my dreams were filled with Frank Lloyd Wright designs. Somehow I passed and was accepted. But in less than 18 months my beautiful dreams were replaced with nightmares of advanced calculus, and I changed majors from architecture to journalism. Which field has suffered most from my decision is subject to debate. But I still admire the profession (some of my closest friends are architects), and I've kept my drafting table and tools at the ready in my office.

The designs I draft now are unimpressive compared with those I dreamed of in '67. Now I draw more earthly projects like sun decks, kitchen cabinets and soapbox derbies, not summer villas or glass-plated towers. The release of several good CAD programs for the Amiga has rekindled my interest in architecture, so I jumped at the chance to see and test the premier electronic drafting tools of the '80's.

## Introduction To CAD

The drawing control a good CAD product offers is unmatched by any other personal computer program. Providing you have the vision, you could use a CAD package to generate lofty architectural drawings, professional schematics, detailed diagrams, error-free circuit boards or less complicated projects like plans for house remodeling, personal furniture, doll houses, etc. In fact, any drawing that can be created with traditional tools (pencils,

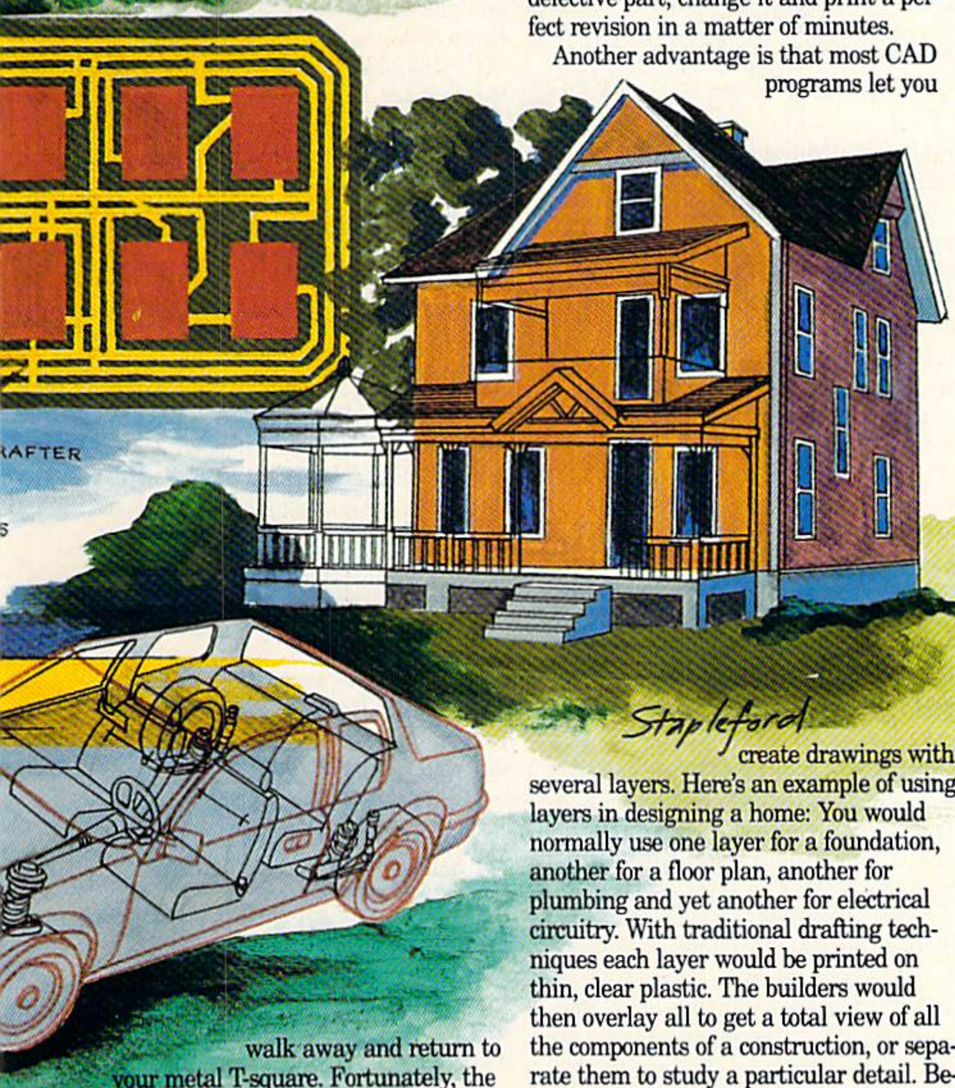


straight edge, compass and ruler) can be created with any of the Amiga CAD programs. Like any tool, using a CAD program with your Amiga is limited only by your abilities and vision.

Are CAD programs really better for design than traditional drafting using paper and pencil? The first-time CAD user might not think so. As with any computer-controlled task, trying to coax a CAD package to do your will the first time may tempt you to walk away and return to your metal T-square. Fortunately, the friendly intuitive interface used by most Amiga programs makes it much easier to make the transition from lead to electronic pencils than was true of early CAD programs on less friendly systems. Still, most new users will experience both delight and frustration the first time they try CAD.

The power and appeal of CAD is not just the exacting detail it allows the user to include in each drawing. CAD programs are appealing because they let the user duplicate often-drawn objects quickly and make quick changes to finished drawings. Traditional paper and pencil drawings are produced to scale, which in itself can be a tedious chore. But imagine finishing a complex blueprint, which you had spent days designing, only to discover you had made a measurement error on one of the parts. Before CAD programs were available, such an error would have meant you had to start over. But if a CAD program were used to create the drawing, you could easily reload the file, select the defective part, change it and print a perfect revision in a matter of minutes.

Another advantage is that most CAD programs let you




create drawings with several layers. Here's an example of using layers in designing a home: You would normally use one layer for a foundation, another for a floor plan, another for plumbing and yet another for electrical circuitry. With traditional drafting techniques each layer would be printed on thin, clear plastic. The builders would then overlay all to get a total view of all the components of a construction, or separate them to study a particular detail. Because most CAD programs support layer design, you can display the same thing electronically (or dump separate or mixed layers to a printer).

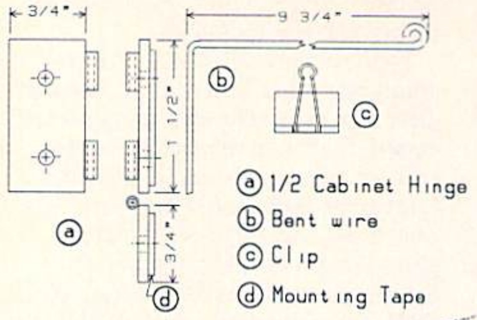
One point that needs to be stressed is that CAD programs (unlike paint programs) support detailed resolution hundreds of times greater than can be displayed on a monitor. To sidestep the limitations of monitors, CAD programs incorporate powerful zoom features which let you enlarge and edit selected areas. Unlike paint programs, the pixel size remains the same in these magnified areas, and only the detail is exposed (see example printout of space station).

If you are unfamiliar with CAD programs, you might be wondering how they differ from paint programs. As you would suspect, the two have much in common. Like the more common paint programs (such as *DeluxePaint II*, *Photo Paint*, *Express Paint*, *Digi-Paint*, etc.) CAD programs employ tools like box, line, freedraw, zoom, rotate, move and so on. But a CAD package's detail is limited only by a printer's resolution not a screen's display. So you can draw minute details using CAD which none of the paint programs could begin to approach. Next the drawing itself is stored as a series of plots, not as a single image. Those familiar with paint programs may not appreciate this feature at first. Because each line is independent of those around it, they can be moved, sized, rotated or erased one at time. This power also has a down side which shows itself when you want to relocate a series of objects. With a paint program you would simply define the area you wanted to move, lift it off the page and move it to the new location. But with CAD programs you must first "group" all the independent objects before you can move them, or else your precise drawing will "fall apart" when you try to lift it. The strength of this arrangement is that it makes it easy to assemble a drawing using standard parts over and over. And grouped objects can be separated as easily as they were united.

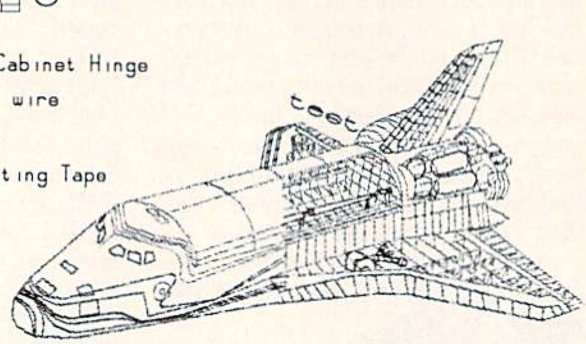
All the current CAD programs (with one exception) support the printers defined by Preferences. But to get the most out of CAD, you'll want to have access to a plotter printer. Plotters use pens, held in moving hands to draw continuous lines on paper rather than connecting dots as most printers do. Thus, drawings created with a plotter look almost exactly as if they had been drawn by hand using a T-Square and pen.

## IntroCAD

Despite its name and bargain-basement list price, *IntroCAD* has plenty of CAD power. Perhaps the program's greatest strength is that it is a native Amiga product. This CAD package was developed on the Amiga, so it takes advantage of the Amiga's multitasking abilities, and intuitive mouse-operated interface. As you would expect, it (like all the current CAD programs) employs standard CAD features like: lines, boxes, circles, arcs, adjustable text size, gridding, snap to grid or drawing, zoom, user-selectable X and Y




A simple drawing by *IntroCAD*.



The Shuttle by *X-CAD Designer*.

axes, screen rulers, erase, move, clone a part, size, rotate, color, type and pointedit. The user can define parts to be grouped and ungrouped for movement or storage, it supports a full palette of color and happily, it updates screens, zooms and prints quickly.

Speaking of printouts, this is the one program which completely ignores the printer selected by Preferences. Instead, the program comes with a group of special print drivers (which includes most of the more popular matrix and laser printers as well as plotters) which can squeeze out all of the resolution your printer can produce. This print approach produces fast, high-quality printouts even with dot matrix printers. The programmer recognized that there will be times when all you'll need is a quick draft-quality printout and other times when you will want every fine line to be duplicated. To keep everyone happy, the printout options let you select between four different degrees of printout quality (as you would expect, printout times increase as quality improves). With all that said, you are probably wondering why they didn't use the prefix *Ultra* instead of *Intro* in the name.

Well, despite the program's strengths it lacks some features power users would insist upon. The most noticeable is the program's lack of layer support. Unlike most CAD programs, all your drafting will be done on the same layer here. It could be argued that the user could get around this limitation by using the program's color support to simulate layer divisions, but this approach would force the user to rely upon manual controls to do what a professional package should do automatically.

The second feature I missed is the program's lack of direct keyboard commands. Because you can't invoke a command directly from the keyboard, you must activate and select features from a menu each time you want to change tools. On one side I have to applaud the program's simple, intuitive interface, but at the same time I bemoan the fact that the programmer stopped short of perfection by giving the user this single route to the program's controls.

Beyond those complaints, there is a practical reason Progressive Peripherals and Software didn't name this CAD program *UltraCAD*—they are saving that name for their next professional-level CAD program which should be close to release by the time you read this.

## HomeBuilders CAD

This program breaks much of the traditional mold in which CAD programs are forged. In doing things differently, programmer Dale Scott-Morris created a tool which is both more powerful and yet weaker than other CAD programs. *HomeBuilders CAD* limits you to designing residential or small buildings only—you can't re-created the space shuttle here. But beyond those limitations, Scott-Morris packed the program with powerful options which not only let the user design homes, offices, etc., quickly but also will accurately estimate the cost of building what you design, including the materials and labor required. *HomeBuilders CAD* even includes landscaping options.

The program makes designing simple. You just pick parts, stretch them to the required dimensions and drop them into place. The program supports layers, so you can quickly move between a level below grade or onto the roof of a multi-story building. If you want to install a window, you simply pick one from the parts menu, place it, and the program takes care of the rest of the detail.

What gives the program its real power and appeal is that it can calculate materials and labor costs. The program comes with an extensive cost/part inventory which you can edit or add to (a program to do this is included). After you have finished a design, you can have the program list (or print out) an overall cost or a complete breakdown of materials and labor requirements. Anyone who has labored hours trying to come up with a job estimate will fall in love with this quick, flexible solution.

But the real power comes when you need to make a change. For instance, suppose you design a building which weighs in at $120,000 but your client can only afford $80,000. Making changes with *HomeBuilders CAD* is simple—you just remove, move, substitute and resize items until your client is satisfied. The program lets you make the alterations in a matter of minutes and then spits out the cost of the changes in seconds. If you are a small business or home contractor you'll love the program; *HomeBuilders CAD* is a powerful specialty program which is worth buying an Amiga to use.

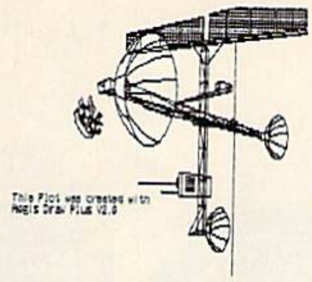
> *HomeBuilders CAD* is a powerful specialty program which is worth buying an Amiga to use.

The drawings created can easily be dumped to a printer, along with any materials/labor estimates. But unlike traditional CAD programs, *HomeBuilders CAD* uses a plain-vanilla screen dump—so what you see on the screen is exactly what you'll get on your printout. While these printouts are usable, they lack the detail and quality you would expect from a professional draftsman.

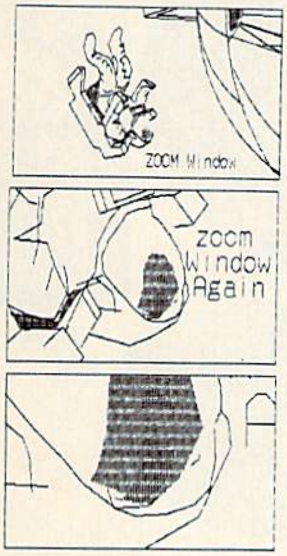
## X-CAD Designer

This one is a full-featured two-dimensional design and drafting tool perfect for professional architects, draftsmen, designers and engineers. For the price (it is the most expensive one compared) you get the most flexible, fastest and most powerful CAD program yet released for the Amiga. All that power drains a lot of memory too, so unless your system boasts at least 2 MB and two floppies or a hard drive, you won't be able to handle *X-CAD Designer*.

Sample from *Draw Plus* showing detail. The same area is zoomed four times.








The program uses three initial windows: one lists current options, the larger displays the drawing and the lower window echoes the command string and displays help information and allows the user to type direct commands to the program. This lower menu looks and responds much like a CLI window. Additional windows are automatically opened and closed as you zoom in and out of areas in the drawing.

The program's command structure uses a verb-noun arrangement which is followed by a modifier. For example, to draw a line you would input (either clicking on the words in the option window or typing directly into the lower window) DRAW followed with the noun LINE. You could modify this instruction with another option like TANGENTIAL or PERPENDICULAR. The location where the line will begin and end as well as its length can be input by the keyboard or by moving the mouse and clicking at the two points. The key to mastering *X-CAD Designer* is mastering its command structure. To make this learning process as painless as possible, the automenu (top window) changes and lists only the available options each time a selection is made. Thus the options narrow as the user moves through the command maze. As you become comfortable with the program, you can even design your own program menus which will quickly duplicate multiple commands according to your specifications. This frees you from having to manually duplicate often-used drafting tasks.

To give you an idea of the power of the program, here is a partial list of its options: arc, circle, dimensions, ellipse, fillet, line, text, polygon, Xhatch, symbol, grid, layer, patternfill, angle, viewpoint, zoom, soft font, dimension, thickness, perpendicular, radius, trim, scale, mirror, echo, length and parallel. Add to that the program's ability to support drawings with 256 layers with 32 viewpoints and the speed to draw 10,000 lines in nine seconds. I didn't time any of the program's routines, but it did some pretty impressive updating at a very expeditious rate.

If you are an engineer, architect, designer or draftsman, you will love the control and power this tool possesses. Using minute details, it will do exactly what you tell it to do. But there is the rub—talking to the program. While *X-CAD Designer* is the most powerful Amiga CAD program on the market, it is also the most difficult with which to communicate. The current version (1.3) does not take full advantage of the Amiga pull-down menus and requesters. And to make this situation even more frustrating, the manual does not include an index. Here's why that is bad: almost all commercial Amiga products allow the user to select devices and files through a DOS window, but not *X-CAD Designer*.

## It is obvious that *X-CAD Designer* was not designed or priced for anyone other than a professional.

To illustrate the problem, let's say you want to display the directory listing on the external drive and load a file from it. With most programs you would click on an icon labeled OPEN which would cause a requester window to open with DOS options. From there you would click on another icon labeled DF1:, and the directories on that device would be listed. When the required directory and file were found, you would simply click on the filename and then another icon labeled OPEN. Such a sensible and intuitive approach has become second nature with most Amiga users. But with *X-CAD* you will have to rethink the process. Rather than click on a sequence of icons, the program makes you use a CLI-like window (it is not a true CLI—you can't access normal DOS commands from it) at the bottom of the page and use *X-CAD*'s command structure. Rather than use the mouse you must type "LIST DIR NAME DF1:", just to change devices and list the directories there. To load a drawing file you would then type "OPEN DRAW NAME DF1:<filename>" and press RETURN. Now you can click on the individual elements of those commands (OPEN, DRAW, NAME, LIST, etc.) and get part way through the chore, but when it comes time to input the filename you must either click on each individual character in the name or use the keyboard. While this command sequence was considered "business as usual" before the Amiga came along, I was surprised to find this time-consuming, rudimentary interface still alive on the Amiga in 1989. And as if to add insult to injury the manual does not include an index, so figuring out how to communicate with DOS requires a lot of reading and experimenting.

Now with that off my chest, you might suspect I hate *X-CAD Designer*. You would be wrong. Without reservation, this is the most professional CAD package I've ever touched. It has every command and option you could dream of and best of all, it is fast. Haitex claims this CAD program can draw 3000 lines per second. Whether that is technically true or not I can't verify, but I will say that everything I've asked it to do, it has done almost instantly, and that is plenty fast for me. But don't take my word on the program's speed and power. I demonstrated the program at a local user's group meeting. As everyone was headed home, an engineer asked if I would run the program through some tasks so he could see it again. To appreciate his impression of the program, you need to remember that this engineer spends his days using a dedicated CAD program on a 32-bit mainframe. His exact words after seeing *X-CAD*'s speed were, "Wow! That's almost as fast as the one at work."

It is obvious that *X-CAD Designer* was not designed or priced for anyone but a professional. So unless your job description fits the category of architect, engineer, designer, draftsman, instructor, or something along those lines, this one is probably not for you. But if you need a

*Continued on page 105*



New software companies seem to come and go every day of the week. Some thrown-together firm thinks that they have the greatest idea since those glasses that let you see through clothes, and they try to sell their product to the unsuspecting software customers through fancy ads and overzealous store clerks who would sell your mother a pair of army boots if given the chance. Don't these companies bother you? They have their sales tactics down pat, but their products are worthless. One of the latest fads is to import poor games from overseas, retitle them or repackage them and try to pass them off to the consumers as a hot, original idea. Meanwhile, our software shelves are cluttered with titles that might have sold well in Europe but that nobody here will buy.

I approached this story carefully; I didn't know what to expect from DigiTek, Inc. of Tampa, Florida. I had seen a couple of their games and liked them, but didn't know much about the rest of their software line. After thoroughly examining virtually every product DigiTek has released, I can honestly say that I was impressed with their current offerings, but I was even more impressed with what DigiTek has in store for Commodore users in the future.

The aspects of DigiTek that really stood out in the course of researching this article were their unique product development system, the quality of their games' graphics and sounds, their down-to-earth attitude and the wide variety of titles and game types available. Certainly, they are no fly-by-night operation.

## People Who Want to Have Fun

One of the first things that I noticed in talking with George Johnson, (DigiTek's president) was that he really enjoys what he does and reflects a level of dedication to whatever product is being worked on at the time. When asked about his title Johnson replied, "We're just a bunch of people who like working on computer programs and don't feel that titles mean that much." After downplaying his title, he went on to tell me that there is only one other principal at DigiTek. Tim Perez takes care of paperwork, legal matters and the administrative side of the company. Johnson also handles the advertising and public relations.

> "Digitek's direction changed completely with the Amiga. We were impressed with the computer..." — *Johnson*

Assisting this duo are four others in the Tampa offices of DigiTek: an office manager, an artist who takes care of all the ads and package art and two programmers who help along the production of games and are trying to form a group of programmers based in Tampa. Amazingly, these are all the people who take care of things at DigiTek. The small in-house staff hints at the way that DigiTek works. Most of the design work is done outside by independent programmers, artists and musicians. In fact, many of DigiTek's programs are done as far away as Europe. A special arrangement with a company in Europe takes care of the other end of the business, but I'll get to that later. First, let me give you a brief history of DigiTek and their quickly ascent in the software industry.

## From Hardware to Empire— A Developing Reputation

Believe it or not, a company with as many titles as DigiTek, released in so short a time, actually began as a hardware company. The first product that DigiTek produced was an RGB conversion kit to convert a Commodore 1701 or 1702 monitor to an RGB digital monitor. Johnson told me that the sales were impressive on the kit—strong enough to develop another hardware kit. The second kit DigiTek developed added all the features of a fast load cartridge to the Commodore operating system by introducing additional chips to the computer's internal construction. Johnson boasted, "There was almost 100% compatibility with commercial programs with that kit." Certainly, the prospects looked good for DigiTek's future as a hardware-based company.

But then something was released that shook the computer world and also gave DigiTek a new direction—towards the

by Russ Ceccola



software side of personal computers. This "something" was, of course, the Commodore Amiga 1000. Johnson told me, "Digitek's direction changed completely with the Amiga. We were impressed with the computer, and decided that we wanted to do some programs for it." This marked a turning point for DigiTek. The Amiga programs that they developed gave the fledgling company a push forward in reputation, bringing their products to the attention of many more people.

The first Amiga product developed by DigiTek was *Drum Studio*. This is their only release to date that's not a game. Basically, *Drum Studio* is an advanced technology drum sequencer that is very easy to use. The one problem (and only one I can find) with *Drum Studio* is that it doesn't allow you to interface your Amiga with MIDI devices. Because *Drum Studio* is not MIDI-compatible, sales were not overwhelming but were noticeable nonetheless. Johnson revealed, "We wanted to keep this product a low-priced drum sequencer—a drum machine with over 5000 different sounds in memory at one time." In that goal, DigiTek succeeded. *Drum Studio* is a keyboard-efficient sequencer that is playable almost instantly—with digitized recordings of drum sounds adding reality and professionalism.

Next up from DigiTek was *Amegas*. Johnson is noticeably proud of the product that "made a name for DigiTek." *Amegas* most closely resembles that hit arcade game *Arkanoid*. They are alike in that they take the idea of a ball and paddle with which you knock out bricks in a wall à la *Breakout*. Their differences are many. *Amegas* uses more of the screen than *Arkanoid*. The home version of the arcade game "lacks a lot of things that the Amiga is able to do," according to Johnson. DigiTek expanded upon the *Arkanoid* theme and created a game that is faster, more colorful and more strategy-based. There are more brick (stone in *Amegas*) types, but the goal is virtually the same as any of these ball-and-paddle games—to clear a screen of all the bricks. The two really neat things about *Amegas* are the variety of stone types and the fact that the powers you obtain by catching the spinning stones are only activated by pushing the right mouse button—allowing you to save the powers for the right moment. Even though DigiTek sold a large number of *Amegas* packages, "We still had to share the home market with *Arkanoid*," Johnson regrets.

> The game that would push DigiTek over the edge was *Vampire's Empire*.

*Hollywood Poker!*, the next DigiTek release, kept the ball rolling. Keep in mind the fact that *Drum Studio* was released around November 1987, and all of these other products since then. Obviously, DigiTek has moved quickly to establish themselves among software developers—and establish themselves they have. Johnson said before *Hollywood Poker!* came out, "The reputation of DigiTek had gone up from our initial efforts, and everyone was watching our company." Regardless of reputation, *Hollywood Poker!* was the first strip poker game to include actual digitized photos of the computer-controlled opponents whose garments you are trying to win. Johnson credits DigiTek with being the first company to put out a strip poker game with real digitized photos: "It was a good concept and it got us very good press. Also, the sales have been consistent because a game like *Hollywood Poker!* is timeless." I can attest to the beauty of the subjects in the pictures—if nothing else.

At this point DigiTek was on the brink of breaking into the big time as far as software developers go—into major distribution channels and the eye of millions of eager software buyers. The game that would push DigiTek over the edge was *Vampire's Empire*—a game that received mixed scores on ease of play, but no really negative reviews. Johnson explained the company's mindset at the time: "It's easy to bring out a lot of programs, but we had tried so far to bring out programs that everybody would like. Even if the programs up to this point were not the types that someone may go for, they at least noticed that the programming was good and the sound and graphics exceptional. With the release of *Vampire's Empire*, it really started to become hectic here."

In *Vampire's Empire* you try to kill Dracula by directing a light beam deep into

MIA BOSNA

his lair by positioning mirrors at various points to reflect the light. All the time, you must avoid nasties that periodically appear on the screen while exploring the Count's Empire to find his lair. *Vampire's Empire* is a unique game, but it takes some time to learn how to handle and position the mirrors. Johnson openly admitted, "When I first got the game in, I thought it should be a little bit easier to control the light beam. But, after a while, it wasn't a problem—it became a definite challenge." That's the way a lot of people felt—myself included. Still, *Vampire's Empire* caught on, DigiTek's logo became recognizable, and things were looking good.

The results of that singular game gave DigiTek a push that spawned their latest releases and some others in between. According to Johnson, "There was a lot of hype over *Vampire's Empire,* and it still hasn't seemed to slow down from a selling standpoint. We released it at the beginning of the summer, and it lasted straight through the holidays. Because *Vampire's Empire* was such a success, we're able to come out with a lot of titles right now."

Subsequent releases included two DigiTek games and two that DigiTek published for "a company that doesn't have the funds or the contacts to release a software product like the ones they designed." *Clever & Smart* (based on the popular West-German comic strip featuring the title characters) and *Gunshoot* (a clone of the arcade game *Bank Panic)* were published by DigiTek.

*Thunder Boy* and *Skyblaster* were designed by DigiTek. *Thunder Boy* is a *BC's Quest for Tires*-type game that features great music and sounds (including the melody of a song from one of my favorite bands—Iron Maiden—while entering a high score), as well as very clear and colorful graphics. *Thunder Boy* is impressive and addicting. *Skyblaster* is a fast-paced 3D combat flight simulation that features solid-fill graphics and many challenges. You may wonder how DigiTek has released so many good games in such a short amount of time. The key is in their production methods.

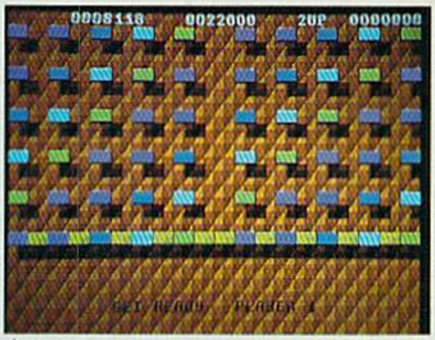
## The Best of Both Worlds

At first, I was a bit skeptical of DigiTek. I thought that they might just be another company that re-releases software from overseas in North America with their name on it. Indeed, if you look at the games' credits this might appear to be true. Most of the names you'll see are distinctively foreign—largely German. What I was blindly looking at when observing the credits was the means by which DigiTek was able to produce such high-quality products. They take European programmers, artists and musicians and combine their talents with similar people in America to develop truly international games. There is a big difference between re-packaging software that has already been released, and using the resources available in Europe.

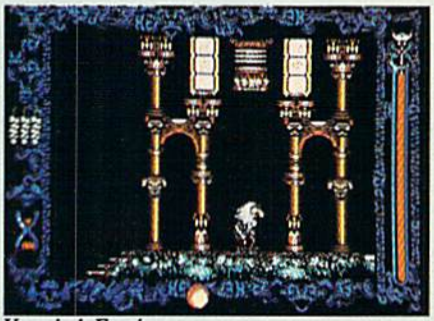
Johnson stated in one of our conversations, "We look at sales when thinking about designing a game. We look at the program too. We want to bring out good, quality product." DigiTek has made some progress in that direction. The proof is in the diversity of the titles DigiTek has made available. Nevertheless, Johnson sees ways of improving the turnaround time on products and the production process as a whole. Let's look at the way it works.

DigiTek has a sister company in Europe called Micro-Partner. Together, the two companies have bridged the distance by each releasing the programs that the other company has designed, as well as their own. Most of DigiTek's current roster of games were created in just that way. But, things are changing and, aside from sound and music, Johnson stated that DigiTek wanted to group the talented people working on a project in one place. So far, Europe has been very good to DigiTek. Johnson noted, "American companies do very poor music in their programs. It seems that computer people in Europe really are better at music. If you listen to *Amegas,* you hear what we think is excellent sound from a man named Harsten Obarski, who is also working on a music program for us. The advantages of using someone overseas are that they are much better at programming music and the ideas for the games are really unique. On the other hand, you still have to have the American tradition in these games. It's important to combine those two game types into one for a unique combination."

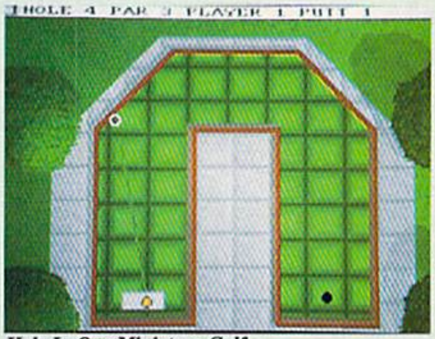
That is exactly what DigiTek has successfully done. Many of their current games were designed through Micro-Partner's programmers, musicians and artists in Europe. So far, the arrangement has worked. Both Americans and Europeans have seen quality programs from DigiTek. However, there is a conscious effort to improve the design situation, since it is tough to keep track of designers in Europe. Johnson mentioned that they plan to form a programming group based in Tampa to bring talented people together




*Amegas*



*Vampire's Empire*



*Hole-In-One Miniature Golf*



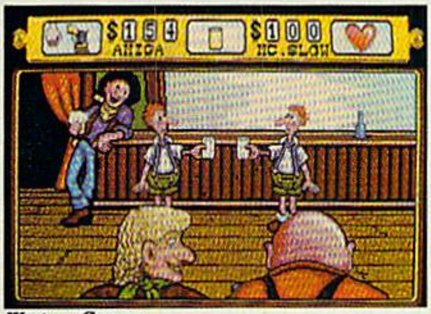

*Hole-In-One Miniature Golf*

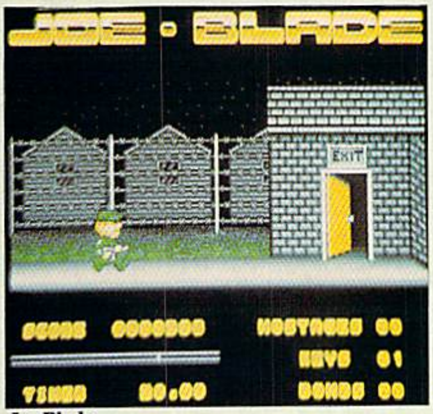



*Powerstyx*

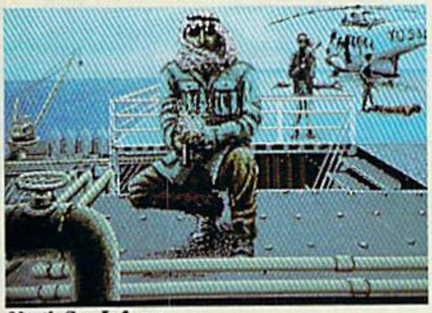


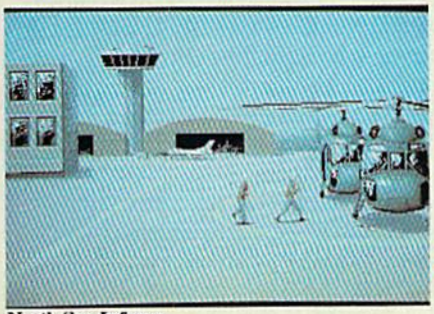
Western Games


Western Games



Joe Blade


North Sea Inferno


North Sea Inferno

to work on new games in one location, instead of over long distances. The rationale behind the group is that "you can use people from other states and even other countries, but if there is too much work involved it's better to have them in one place. The healthiest way to do a project is to have a group of five or six people working together for a while on that project and then collectively move on to a new project when the first is completed."

Until that group becomes a reality, enjoy the programs already available from DigiTek and appreciate the European craftsmanship and style.

## Four Blockbusters

At press time, DigiTek had four new games available, two of which received heavy advertising in major publications (*Hole-In-One Miniature Golf* and *Western Games*). The other two titles, *Joe Blade* and *Powerstyx*, are games that were already released in Europe but that DigiTek choose to re-release here because of their excellent graphics, sound and game-play. In fact, *Powerstyx* may just be my favorite DigiTek arcade game so far. All four games are addictive and well-designed. They deserve special attention because of their fine quality and their relative newness.

*Hole-In-One Miniature Golf* is quite simply the best miniature golf computer program ever designed—for home computers or arcades. Nothing comes close. I've played miniature golf since I was half as high as a *PacMan* machine and have seen nothing that captures the atmosphere, enjoyment and excitement of miniature golf better than *Hole-In-One*. The graphics are beautiful, the sound effects as good as they can be and the holes are many and varied. If DigiTek continues to produce games like this one, I'll keep anxiously coming back for more, as will many consumers.

*Hole-In-One* offers you a choice of four holes and one tutorial course. The computer automatically fills in a score card after each hole; you see it after the ninth and eighteenth holes. The four courses are Classics, Intermediate, Expert and Menagerie. Before you start playing *Hole-In-One* seriously, try the Tutorial course. It steps you through a simple course that graphically shows all of the options of the game and the many types of obstacles and terrain you'll encounter.

Miniature golf was never so easy—easy to play that is, not easy to win. Just place the ball on the start pad by clicking the mouse button, pull a rubber-band line to point in the direction you want the ball to travel, and click the button again to send the ball on its way. Some of the many options include the ability to retry a shot, see an instant replay of your last shot, use your name on the score card, print out the score card and view the contours of the hole from different perspectives, if applicable. What is really nice about *Hole-In-One* is the variety of holes, from simple one-shots to hair-pullers. Scenes include pinball machines, desert islands and a snowman. To round things off, a digitized crowd goes "Oooo" when you get a hole in one. *Hole-In-One Miniature Golf* isn't putting around! [*Editor's Note: The courses can be loaded onto your hard drive for added speed and convenience.*]

In *Joe Blade* you must infiltrate an enemy stronghold to release hostages. I found it worth mentioning because it is very easy to play and the graphics are very smooth and spectacular as you go from room to room in the prison. You can find enemy uniforms to disguise yourself, as well as ammunition and other assorted objects. Most important to your mission are bombs and keys. The keys allow access to different parts of the prison, and the bombs let you blow up the place when you are finished. You simply move your character around the prison in a perspective reminiscent of *Labyrinth*, in and out of doors and left and right on scrolling screens to reach your goal.

A subgame exists within *Joe Blade* that makes it all the more intense. You must diffuse bombs you come across in the game by unscrambling a code letters to deactivate them within 20 seconds. To unscramble the bomb's shutoff code, you have to switch two letters at a time and continue to switch them until you have the letters in alphabetical order. This is not as easy as you might think and requires a quick mind and a steady, controlled joystick hand. This subgame makes the game even more fun to play. I rate *Joe Blade* as one of the better arcade adventure-type games that I've seen this year.

*Powerstyx* takes the popular thinking-man's arcade game *Qix* (pronounced "kicks") and embellishes it tremendously, making a superior version of the original, not unlike what *Amegas* did to *Arkanoid*. The object of the game is to move a pointer within the game screen, making boxes that use one of the present borders as one side of the box. You can make boxes as large or small as you want, as long as part of the box or polygon uses part of an exist-

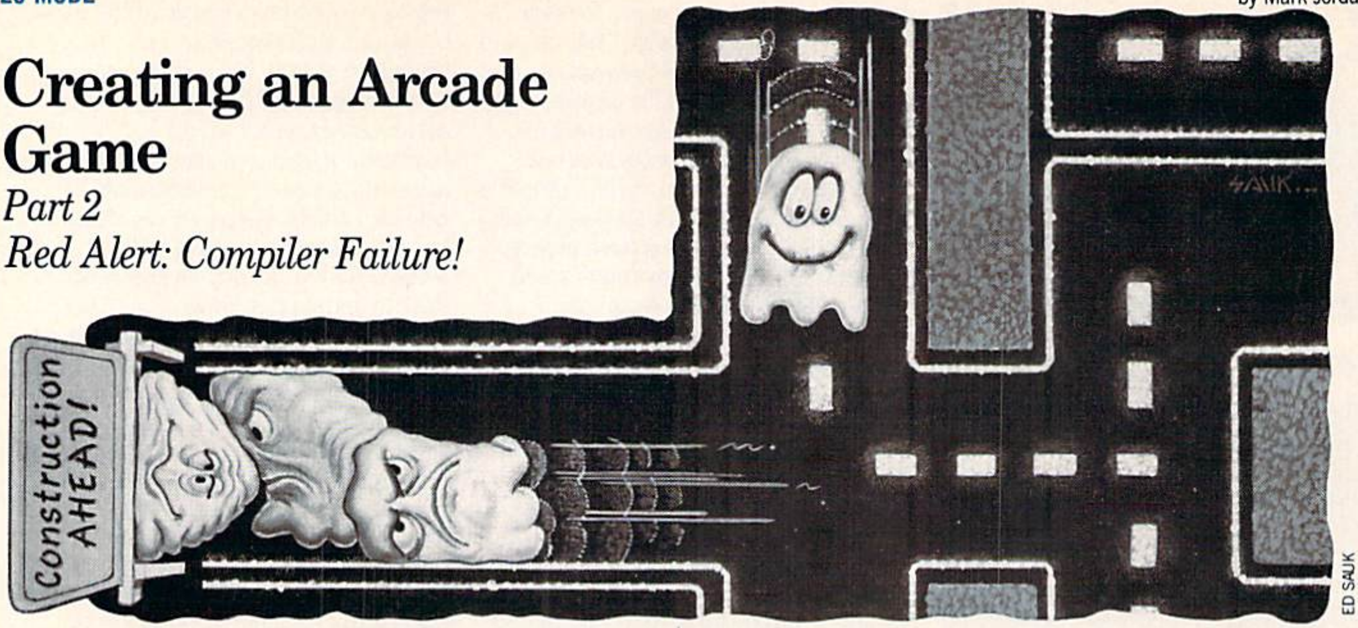
*Continued on page 108*

by Mark Jordan

# Creating an Arcade Game

*Part 2*

*Red Alert: Compiler Failure!*




*Is BASIC a girl's language? No way, muchacho. (Flex . . . Hold . . . Release)*
*Hasta luego.*

That's how I ended last month's article (I trust you read that far.) It was a great ending, if I do say so myself—funny, yet effectively reinforcing all that had come before.

Well, it's not funny anymore. Why not? Because I wrote it before I had finished programming "Frizzy," the *PacMan* clone we started last issue which was going to prove that BASIC 7.0, if compiled, was equal to the task of making commercial software.

And the first installment of the program certainly was up to the task. I hope you had a chance to type it in and compile it. Just using BASIC and a compiler, I was able to create the maze, the energy dots, a scoring mechanism, and a joystick-driven character moving along at a swift clip.

After I had submitted that portion of the game, I went to work on finishing the game. I got the ghosts done, the fruit bonuses, everything the original *PacMan* had and more.

Satisfied with my work, I grabbed the compiler disk and ran it. I eagerly waited to see how fast everything would run once compiled. The results: terrible. All the code I added had slowed things down to the pace of a frame-advance on a VCR. (In case you don't have that feature on your VCR, suffice it to say that Frizzy wasn't exactly hustling at 110%.)

Back into the code. Fine-tuning here, variable-changing there. At last, I was ready to compile again.

Same result.

"Okay," I muttered, "so BASIC isn't fast enough to do the job compiled. Surely it can do a fine job with just a little machine language peppered in at the crucial spots." So I wrote a beautiful machine-language routine to move the ghosts. Even uncompiled, the speedup was stunning. Now, Mr. Compiler, eat this.

It ate it. And gagged it back up. What happened was that the program would no longer compile. I was using *Blitz! 128* from Skyles Electric with which I am very familiar. I've used it successfully many times in the past, but I had had some problems. One involved getting long programs to compile. Frizzy, however, wasn't long, only 30+ blocks on the disk.

Another thing I had discovered on previous attempts was that *Blitz!* would fail more frequently if my disk drive was hot from use. So I shut my computer off, waited several hours and tried again . . . with the same results. Another "solution" I had happened upon in former compilings was to force my 1571 disk drive into 1541 mode. This often proved successful. But not with Frizzy.

"So you want to play dirty," I said to the disk in my drive. (I am not using artistic license here, I really said those words, or something worse.) "Well, two can play at this game."

I grabbed my *BASIC 128* compiler from Abacus. It had been sitting on the shelf for over a year. I had tried using it once but got discouraged when I discovered that: 1) it wouldn't accept the SPRSAV statement, 2) it had a strange method of incorporating the POINTER function, 3) it was picky about how I used BEGIN/BEND statements, and 4) it came with a big, fairly complicated user manual. Complicated or not, and all the above drawbacks notwithstanding, the time had come to put it to use.

Or so I thought; *BASIC 128* had different ideas. As I said, SPRSAV is unacceptable to *BASIC 128*. So I laboriously wrote a machine-language equivalent to use as a subroutine. It worked great in BASIC. It worked not at all compiled.

You see, the routine's task was to do something like this: SPRSAV A$,1 that I could access with a simple SYS. The routine needed to find A$ in BANK1 of memory and then copy the first 64 bytes to the proper sprite data area. As I said, I got it to work fine in BASIC. The trouble was (and is), *BASIC 128* doesn't use the same method of maintaining strings as does BASIC 7.0. I just couldn't figure out how it might be done.

Back to the keyboard. In case you're wondering, by now I probably had well over a hundred hours in on the project. It was causing me to get behind on my other chores. My lawn was getting tall, the air in my car tires low, and the entire process was putting me in a fairly bad mood. How bad? Ever seen a gorilla beat his chest, throw back his head, and *roar?* That bad.

I tried both compilers again, new versions and old. Nope. I took out a big chunk of code (downgrading Frizzy in the process) to see if memory use was the problem. Huh-uh. I tried pulling all the graphics variables out of the main program and writing them to disk with a boot program which the host program would load while running. It didn't work. I even tried compiling on completely different 128 systems to no avail.

*Continued on page 80*

*Continued from page 78*

ers to see what the scoop was. I tried to call Skyles Electric Works but could only get a recording. Next step was to write to them, explaining the problems I had been having in detail. I included a disk with my un-compiled program on it. To date (three months have passed) I haven't heard from them. I called Abacus. A friendly man confirmed my suspicions, that SPRSAV just plain old wouldn't work. It didn't thrill me to find that out, but it was nice to at least know that it wasn't somehow my fault.

So I asked my friendly editor if I could delay the project a month, then another. Finally, I sat down one week ago to try one last time to get the whole thing to work.

It's now one week later. And this article is this result. I have not been able to get Frizzy to compile as is. Now let me assure you, the program is finished and it works in BASIC 7.0. And I have not given up on the project yet because I did get one ray of hope. I took all the SPRSAV statements out of the program and tried compiling it with *BASIC 128* and it worked . . . for a while. It crashed twice for reasons not apparent. But while it worked, it worked great—it even ran a little too fast, a problem I can deal with. My present plan is to re-write the code one last time, this time putting the different sprite shapes into memory directly and manipulating the sprites by moving the sprite pointer, just like I used to do with BASIC 2.0 on the Commodore 64. I think, (I hope), that next month we'll have the completion of Frizzy. I also hope that anyone reading this who knows ways around the problems I have detailed will write to me in care of *Commodore Magazine*. I will spread the word if a solution comes my way.

Do I sound mad? I'm not. Because my odyssey with these two compilers has made me an older, wiser programmer. I have learned several things:

1) BASIC, even compiled BASIC, is not up to creating commercial arcade software without some help from machine language.

2) BASIC compilers are not simply "plug in and play" devices. They are, at times, fussier than the neighbor's baby.

3) BASIC compilers do a fine job with the "conventional" BASIC statements but not as fine with graphics and sprite commands.

4) All BASIC compilers are not created equal (see "*Blitz 128* vs. *BASIC 128*" below.)

## A Silver Lining

As I stated above, at one point I tried pulling the graphics/SPRSAV routines out of the host program and into a parasite program. That didn't seem to help, but it did leave me with a graphics program which I think demonstrates some high-powered sprite routines which you can use with plain old vanilla BASIC.

If and when we get Frizzy compiled effectively, you'll see these effects in action. For now, by typing in the program listing you see here, you'll get a preview of what Frizzy looks like when he gets captured by a ghost ("The Late, Great Disappearing Sprite"). You'll also get a chance to see how to create some unique ghost sprites that throb and blob, hither and yon. And finally, you'll see a way to create some unusual numbers which can be flashed anywhere on the screen without destroying the screen's contents. This technique is used when Frizzy gets bonus points.

Type in the listing and try out the routines. An explanation of the techniques is included in REM statements. You can leave them out if you want, as they don't affect the techniques.

Allow me to close with a comparison to a famous epic poem. Beowulf, the first superhero in English literature, trusted in a mighty sword, Naegling, to win many battles. Eventually though, it failed him when he tried to slay a dragon—it snapped in the dragon's skull. The narrator of the poem says that he "overtaxed every weapon he ever bore." Beowulf died as a result.

I guess I overtaxed BASIC in the same way: it just isn't capable of producing a commercial-quality arcade game, at least not without the magical charm of machine-language subroutines or of a faster CPU.

But my comparison breaks down after that. BASIC didn't snap. It's still there, inside my Commodore 128, humming away. And I'm not dead yet. And maybe, just maybe, next month we shall kill that dragon—Frizzy!—after all.

Till we meet again.

## *Blitz! 128* vs. *BASIC 128*

*Blitz!* and *BASIC 128* are as different in many ways as an automatic transmission is from a stick shift. Here's the point/counterpoint.

| *Blitz! 128* | *BASIC 128* |
|---|---|
| Easy to use, no manual-reading required | The program is *not* intuitive and the manual isn't either. |
| Accepts SPRSAV but not if the variable is a subscripted variable. | Just plain won't mess with SPRSAV. |
| Gracefully gets out of the way when done compiling. | Computer hangs up after compiling forcing you to reset. |
| Allows you to re-run compiled programs without reloading. | Clears compiled program out of memory after running every time. |
| Allows you to switch to interpreter while program is running. | It might allow the same, but I haven't figured out how yet. |
| Loads files easily from within the running program. | It allows file loading, but is tempermental in doing so. |
| Compiles only in P-code. | Allows P-code or machine code compiling and is faster either way. |
| Doesn't allow many options. | Allows tons of options, including ability to move data anywhere in memory. |
| Uses memory much the same as the interpreter. | Very effectively manages memory allowing access to bank 0 and 1 for variables. |

With 6 of the 9 points in favor of *Blitz!* you might expect me to recommend it but I don't. The three points that favor *BASIC 128* are very powerful. Speed is the reason we compile things in the first place and Abacus' *BASIC 128* is the clear winner here. However, I can't make a blanket recommendation for *BASIC 128* either because it has so many more quirks. ■

*Continued on page 82*

# Learn to troubleshoot and service today's computer systems as you build a fully XT-compatible micro, complete with 512K RAM and powerful 20 meg hard drive

NEW! Includes 20 meg hard drive!



Your NRI computer training includes all this: • NRI's unique Discovery Lab® for circuit design and diagnosis • NRI's hand-held digital multimeter featuring "talk-you-through" instructions on audio cassette • A digital logic probe that lets you visually examine computer circuits • The new Packard Bell VX88 computer with "intelligent" keyboard, 360K double-sided, double-density disk drive, 512K RAM, 16K ROM • 20 megabyte hard disk drive • Bundled software including MS-DOS, GW-BASIC, word processing, spreadsheet, and database programs • Packard Bell reference manuals with programming guidelines and schematics.

### Train the NRI Way— and Earn Good Money Servicing Any Brand of Computer

Jobs for computer service technicians will almost double in the next 10 years according to Department of Labor statistics, making computer service one of the top 10 growth fields in the nation.

Now you can cash in on this exciting opportunity—either as a full-time industry technician or in a computer service business of your own—once you've mastered electronics and computers the NRI way.

NRI's practical combination of "reason-why" theory and hands-on building skills starts you with the fundamentals of electronics, then guides you through more sophisticated circuitry all the way up to the latest advances in computer technology. You even learn to program in BASIC and machine language, the essential language for troubleshooting and repair.

### Get Real-World Skills as You Train With a Powerful XT-Compatible Micro—Now With 20 Meg Hard Drive!

To give you hands-on training with the absolute in state-of-the-art computer technology, NRI includes the powerful new Packard Bell VX88 computer as the centerpiece of your training. As you assemble this fully IBM XT-compatible micro from the keyboard up, you actually see for yourself how every section of your computer works.

You assemble and test your computer's "intelligent" keyboard, install the power supply and 5¼" disk drive, then interface the high-resolution monitor. But that's not all.

Your hands-on training continues as you install a powerful 20 megabyte hard disk drive—today's most-wanted computer peripheral—now included in your course to dramatically increase the data storage capacity of your computer while giving you lightning-quick data access. Plus you work with exclusive word processing, database, and spreadsheet software, yours to use for your own professional and personal applications.

As you build your computer, performing key demonstrations and experiments at each stage of assembly, you get the confidence-building, real-world experience you need to work with, troubleshoot, and service today's most widely used computer systems.

### No Experience Needed, NRI Builds It In

This is the kind of practical, hands-on experience that makes you uniquely prepared to take advantage of today's opportunities in computer service. You learn at your own convenience in your own home.

No classroom pressures, no night school, no need to quit your present job until you're ready to make your move. And all throughout your training, you've got the full support of your personal NRI instructor and the NRI technical staff, always ready to answer your questions and help you whenever you need it.

### FREE 100-Page Catalog Tells More

Send today for NRI's big, 100-page, full-color catalog that describes every aspect of NRI's innovative computer training, as well as hands-on training in robotics, video/audio servicing, electronic music technology, security electronics, data communications, and other growing high-tech career fields. If the coupon is missing, write to: NRI School of Electronics, McGraw-Hill Continuing Education Center, 3939 Wisconsin Avenue, Washington, DC 20016.

IBM is a registered trademark of International Business Machines Corporation

## SEND COUPON TODAY FOR FREE NRI CATALOG!

NRI

McGraw-Hill Continuing Education Center
3939 Wisconsin Avenue, NW, Washington, DC 20016

For Career courses approved under GI Bill
☐ check for details.

✔ **CHECK ONE FREE CATALOG ONLY**

- ☐ **Computer Electronics**
- ☐ TV/Video/Audio Servicing
- ☐ Robotics
- ☐ Electronic Music Technology
- ☐ Security Electronics
- ☐ Digital Electronics Servicing
- ☐ Electronic Design Technology
- ☐ Industrial Electronics
- ☐ Communications Electronics
- ☐ Basic Electronics
- ☐ Bookkeeping and Accounting
- ☐ Building Construction
- ☐ Automotive Servicing
- ☐ Air Conditioning, Heating & Refrigeration
- ☐ Small Engine Repair
- ☐ Electrician
- ☐ Locksmithing & Electronic Security
- ☐ Travel Careers
- ☐ Telephone Servicing
- ☐ Paralegal

Name (Please print) ______________________ Age ____

Street ______________________

City/State/Zip ______________________ 235-029

We'll give you tomorrow. Accredited by the National Home Study Council

*Continued from page 80*

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30008, Shreveport, LA 71130-0007, 1-800-831-2694.

### Listing

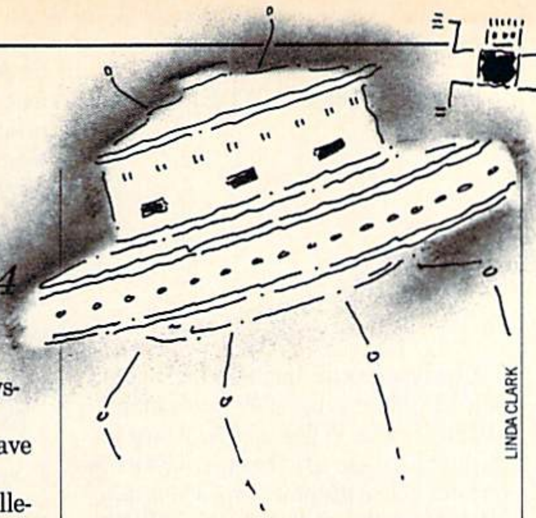
```
10 LC$=CHR$(14)'CHAY
20 DIM G$(16),CG$(16)'BOIB
30 FOR T=0 TO 127:POKE 3584+T,0
   :NEXT'GOAF
50 REM CREATE FRIZZY FROM DATA'BUBH
60 FOR I=0 TO 1'DDDE
70 FOR T=21 TO 56:READ A$
   :POKE 3584+(I*64)+T,DEC(A$)
   :NEXT'KANO
80 NEXT'BAEE
90 REM SAVE FRIZZY'S 2 SHAPES TO S1$,
   S2$'BDJN
100 SPRSAV 1,S$(1):SPRSAV 2,S$(2)'CRQA
120 GRAPHIC 1,1:X=0'CGXY
130 REM DRAW AND FILL 15 CIRCLES'BUIE
140 FOR I=1 TO 16:T=I*6'FIJE
150 CIRCLE 1,12,12,6,6,,,T, 60
    :PAINT 1,12,12'CBXG
160 REM DRAW TWO 'EYES' IN EACH
    CIRCLE'BAXI
170 LOCATE 10,12:DRAW 0,1;T*4
    :DRAW 0,2;55'ETQJ
180 REM SAVE EACH CIRCLE TO G$()'BUXI
190 SSHAPE G$(I),0,0,23,20:SCNCLR'CQAI
200 NEXT'BAEV
220 REM MOVE SHAPES INTO SPRITES'BVME
230 FOR T=3 TO 8:SPRSAV G$(T*2),T
    :SPRITE T,0,T+2:MOVSPR T,(T-1)*37,
    200:MOVSPR T,T*45#1:NEXT'NUFR
250 REM PRINT FRIZZY ON SCREEN'BTCH
260 GSHAPE S$(1),0,0'BJWE
270 REM ERASE FRIZZY WITH SHRINKING
    CIRCLES'BGSM
280 FOR T=10 TO 1 STEP-1'FFPI
290 CIRCLE 0,14,12,T,T-1'CMOJ
300 REM AND SAVE EACH SHRINKING
    SHAPE'BAQE
310 SSHAPE SC$(T),0,0,23,21'BQBC
320 NEXT'BAEY
340 REM CREATE SLOPING NUMBERS'BUWH
350 SCNCLR'BAGC
360 FOR T=1 TO 16'DETF
370 REM PRINT NUMBERS 1 - 16'BQCI
380 CHAR,0,0,STR$(T*100)'DLFJ
390 J=0:K=8'CFEI
400 REM SLICE EACH NUMBER INTO 8
    PARTS'BAMF
410 FOR M=0 TO 7:I=M*4'FHLD
420 REM SAVE A 4-BIT WIDE VERTICLE
    SLICE'BCDI
430 SSHAPE A$,I+8,0,I+11,7'DNXF
440 REM THEN PRINT SLICES ELSEWHERE
    AT 1-PIXEL DECREMENTS'BSRP
450 GSHAPE A$,54+J,K:J=J+3:K=K+1'GQCL
460 NEXT'BAEE
470 REM THEN SAVE EACH NEW NUMBER TO
    A STRING'BFHO
480 SSHAPE CG$(T),54,2,77,22'BRIK
490 NEXT'BAEH
510 REM DEMONSTRATE THE EFFECTS'BVGG
520 SPRITE 1,1,15:MOVSPR 1,160,
    150'CSZG
530 FOR T=3 TO 8:SPRITE T,1:NEXT'FJPH
540 GRAPHIC 0,1:CHAR,9,0,LC$+"[SHFT U]
    SE JOYSTICK IN PORT 2"'DMAO
550 FOR T=1 TO 8:AN(T)=T*45-45:SP(T)=2
    :NEXT'IWHO
570 DO:J=JOY(2)'DFOJ
580 MOVSPR 1,+X(J),+Y(J)'DMYL
590 S=(S+1)AND 1:SPRSAV S$(S+1),1'FQFP
600 FOR T=3 TO 8:G(T)=(G(T)+1)AND 15
    :SPRSAV G$(G(T)),T:NEXT'IFEL
610 MOVSPR 1,AN(JOY(2))#SP(JOY(2))
    'DSBG
620 IF BUMP(1)AND 1 THEN MOVSPR 1,0#0
    :BN=(BN+1)AND 15:SPRSAV CG$(BN+1),
    2:MOVSPR 2,RSPPOS(1,0)+5,RSPPOS(1,
    1)-15:SPRITE 2,1,BN+1:GOSUB 650
    :SPRITE 2,0:B=BUMP(1)'VCTG
630 LOOP'BAKD
650 FOR T=10 TO 1 STEP-1
    :SPRSAV SC$(T),1'GPAM
660 FOR I=1 TO 100:NEXT
    :SOUND 1,T*2000,1,1'GSNN
670 NEXT'BAEH
680 RETURN'BAQI
700 DATA 00,19,60'BILD
710 DATA 00,6A,D8,00,97,68,00,1F'BXFH
720 DATA D0,00,35,B8,00,1F,E8,00'BXHI
730 DATA FF,F0,07,FF,E0,07,E3,D0'BXPJ
740 DATA 00,1F,60,00,00,F0,00,01,
    F8'BBXK
760 DATA 00,0C,90'BIXJ
770 DATA 00,0A,A8,00,1F,D0,07,FB'BXIN
780 DATA E0,00,7E,D8,00,07,F0,00'BXHO
790 DATA 07,C8,00,07,E0,00,07,D8'BXYP
800 DATA 00,0F,60,07,FC,F0,00,01,
    F8'BBUH
```

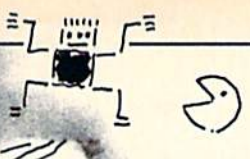
END

by Mike Rivers

# Conjuring Sprites

## *for the Commodore 64 and 128*





LINDA CLARK

Alright, everybody, get out your system guides, we're going to learn sprite programming! You'll want to have the following items handy before you start: a pencil, an eraser, some quadrille-ruled graph paper or equivalent, a blank disk and a pocket calculator (this is optional, you can also use your computer in direct mode). Now, fire up that eight-banger and let's get going!

Those of you who have Commodore 128/128D models will want to look at pages 109 to 126 to see how easy things are, and 64 owners, depending on which edition of the manual they have, will want to find "sprites" in the index and turn to the corresponding page.

Sprites are moveable blocks of memory filled in such a way that they represent an image 24 pixels (three bytes) wide by 21 pixels high when superimposed on screen memory. Once you have a sprite in memory, you can move its image around on and off the screen using pokes and the VIC registers.

If you have a 128, you can start designing sprites immediately by typing SPRDEF in 40-column mode. Then, turn to page 110 in your system guide and refer to the "Sprite Definition Command Summary" and the step-by-step example to get started. In a matter of moments you can turn out an inter-galactic hyperspace polytronic trans-dimensional vehicle (spaceship), or a formula turbo-charged fuel-injected grand prix eliminator (race car).

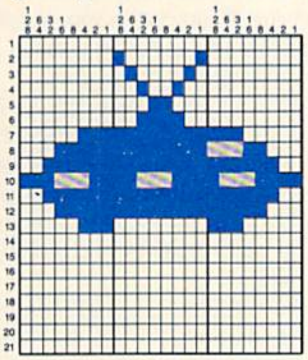


Illustration 1: ▨=0 ■=1

Those of us who don't have a sprite editor will immerse ourselves in computer science for a moment by designing a sprite by hand.

Our goal here is to draw the sprite and convert the image into data for the computer. The classic way to do this is to make a "bit map" on a piece of graph paper. Take a piece of graph paper and make a grid that is 21 spaces high and 24 wide. Leave space on the right for calculations. Label the columns from left to right, with the following sequence: 128, 64, 32, 16, 8, 4, 2, 1. Do this three times until you have three fields, eight bits wide. Then number the rows one through 21, top to bottom on the left side.

Now you are ready to draw your sprite. Start by outlining the shape of the sprite. Then go back and fill in the grid with ones and zeros. Think of the squares that are to be filled in as being "on" and the ones that are blank as being "off." Place ones where the squares are filled in and zeros where they are blank. Illustration 1 shows your basic Venusian multi-spatial anti-gravity transport unit (flying saucer).

The next step is to convert the picture into data statements the computer can use in BASIC. By dividing the graph into three groups of eight columns we can easily see three bytes per row. Using the numbers at the top of the columns, the "binary place values," we can determine the decimal number that corresponds to the "bit pattern" for that row. According to illustration 1, the top row, which is blank, would be calculated like this:

The first byte is:

$128\times0 + 64\times0 + 32\times0 + 16\times0 + 8\times0 + 4\times0 + 2\times0 + 1\times0 = 0$

The next two bytes would be the same, so the BASIC data statement which represents row one would be:

```
DATA 0,0,0
```

To make things a little more interesting, let's calculate row ten where the portholes are. The first byte would be calculated like this:

$128\times1 + 64\times1 + 32\times1 + 16\times0 + 8\times0 + 4\times0 + 2\times1 + 1\times1 = 227$

The second byte would be:

$128\times1 + 64\times1 + 32\times0 + 16\times0 + 8\times0 + 4\times1 + 2\times1 + 1\times1 = 199$

The third byte would be:

$128\times1 + 64\times0 + 32\times0 + 16\times0 + 8\times1 + 4\times1 + 2\times1 + 1\times1 = 143$

The corresponding BASIC data statement would be:

```
DATA 227,199,143
```

After you've done this for each row you have a complete set of data for one sprite. Think fast! How many bytes are in a sprite? Very good! I knew you'd get that right.

Commodore 128/128D owners can save their sprites in binary files as discussed on page 123 of the system guide. This allows you to go directly from SPRDEF to disk with your sprite definitions without entering data statements. You can really get a lot of sprites designed and saved quickly. It's like having a desktop sprite factory cranking out sprites for you.

Now that we have the data for a sprite image (sometimes called a sprite definition), we want to put it in the computer and control it. Here, it is useful to mention the importance of making distinctions between the sprite data itself, the pointers to the data, the location of the sprites on the screen and the location (X and Y) registers.

To get the data you have calculated into the computer, POKE the sprite data into memory using a FOR/NEXT loop, with READ and POKE statements. Choose a starting address that is a multiple of 64. The manual uses 12288, so we will too:

```
50 FOR N=0 TO 62
60 READ S
70 POKE 12288+N,S
80 NEXT
```

Now the sprite data is in memory.

There are numerous memory locations in the video chip (VIC-II) which are known as "sprite registers." Each register is dedicated to a specific aspect of sprite control. First we will be concerned with the sprite enable register. The sprite enable register turns on any one or combination of, eight sprites controlled by the VIC II chip. To do this, a value must be poked into this register which corresponds to the sprites to be turned on. The POKE value for each sprite is equal to two, raised to the number of the sprite to be enabled:

| Sprite Number | POKE value |
|---|---|
| 0 | 1 |
| 1 | 2 |
| 2 | 4 |
| 3 | 8 |
| 4 | 16 |
| 5 | 32 |
| 6 | 64 |
| 7 | 128 |

If you wanted to enable sprite 5, you would POKE a value of 32 into location 53269 like this: POKE 53269,32 (just remember this also sets the other bits in the sprite enable register to zero, which *disables* sprites 0, 1, 2, 3, 4, 6 and 7). To enable sprites 0, 3, 4 and 7, you would add the POKE values for those sprites 1+8+16+128 = 153 and POKE the result into location 53269 (which in turn disables sprites 1, 2, 5 and 6).

After enabling the sprites, we must tell the computer where the sprites are stored using what are called "sprite pointers." The sprite pointers contain numbers that "point" to the section of memory that contains the actual sprite data. These numbers are small enough to be expressed in a single byte of information (decimal numbers 0–255). The starting address for the sprite information is a multiple of 64. When you multiply the pointer by 64 you get the starting address for your sprite information (make sure the address you choose is an even number).

The sprite pointers and their corresponding sprites are:

| Sprite No. | Memory Location |
|---|---|
| 0 | 2040 |
| 1 | 2041 |
| 2 | 2042 |
| 3 | 2043 |
| 4 | 2044 |
| 5 | 2045 |
| 6 | 2046 |
| 7 | 2047 |

Using the same address from the example above, divide 12288 by 64: 12288/64 = 192. POKE this value into the location which corresponds to the sprite you previously enabled. To point to the memory segment beginning at 12288 that holds sprite 5, you would POKE 2045,192.

All that is left to do is to assign a color to the sprite and provide some means to move it. Each sprite has its own color register from 53287 to 53294. To assign a color to a sprite, POKE a color code between 0 and 15 into the memory location for the sprite you want to color. For example to color sprite 7 yellow, POKE 53294,7.

Finally, after defining the sprites' shape, enabling them, pointing to their memory locations, poking them into memory, and coloring them, we can move them. Each sprite has two registers that correspond to its X and Y coordinates on the screen. By poking values for X and Y into the sprites position registers, the sprite will move on the screen.

To do this, a FOR/NEXT loop can be used to POKE an incrementing index variable into the sprites' X and Y position registers like this:

```
 85 FOR I = 0 TO 200: REM Set up
      loop; index = I
 90 POKE 53262,I: REM Poke sprite 7 X
      position with I
 95 POKE 53263,I: REM Poke sprite 7 Y
      position with I
100 NEXT: REM increment index
```

It is important to note that of the 320 possible horizontal positions the sprite may move through, the X position register can only represent 256. This is because an eight-bit memory location or register can only be used to express numbers from 0 to 255, for a total of 256 numbers. Programmers call this numerical boundary for the sprite's X position "the seam." To handle sprites that are intended to cross the seam, a special register at 53264 is used. The other eight X position registers can each "borrow" a bit from this special register. Turning on the bits zero through eight of this register move sprites zero through eight respectively, past the 255th horizontal position. For example, POKE 53264,128 will move sprite 7 past the seam (again, remember this will also set the other bits in this register to zero, which will disable sprites 0, 1, 2, 3, 4, 5 and 6 from moving past the seam). To make the sprite appear on the left side of the screen again, turn off bit seven. It is good programming practice to always check this register, called the sprite X position Most Significant Bit (MSB) register, with a PEEK before using sprites to make sure they are off, otherwise your sprite can end up far from its intended place in memory and crash your program.

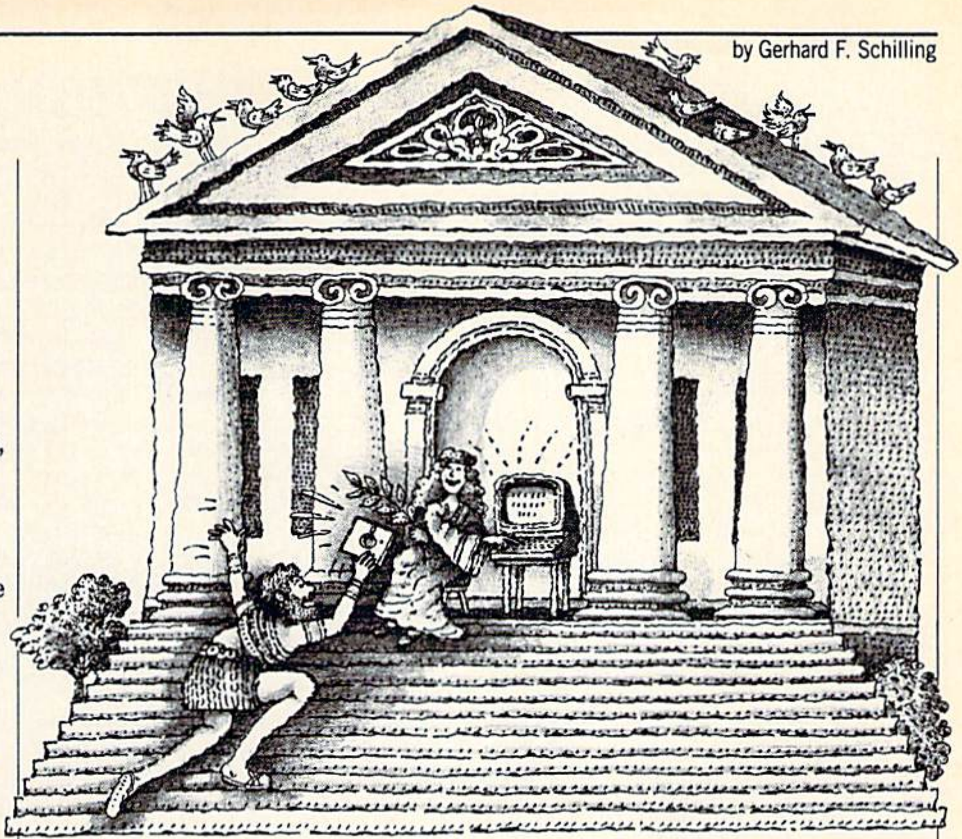
Some of the X and Y positions are not visible on your screen. This configuration allows sprites to move smoothly on and off the screen, like actors from the wings of a stage. Vertically, positions 50 through 249 are visible, and horizontally, positions 24 through 342.

Now that you know the rudiments of sprite programming, you are well on your way to creating your own games and animations. Try adding keyboard control, then convert your program to use joysticks.

by Gerhard F. Schilling

# The Delphic Oracle

*for the Commodore 64*



GORDON KIBBEE

Much of life in ancient Greece was governed by the prophecies of the Delphic Oracle. Near the foot of Mount Parnassos at Delphi, stood the temple of Apollo. He was the Olympian god of light, beauty, youth, healing, music and poetry. Most importantly, he was also the god of prophecy.

In the temple, his priestess Pythia would answer all questions asked. But the wording was often ambiguous, and you had to interpret what it was that you heard and saw—or thought you did.

## The Program

The program is written in BASIC, but runs very fast. After typing it in, save it on disk or tape. Then simply RUN it. All instructions appear on the screen. If you hit a wrong key, it will not be accepted and you will only hear a buzzing sound. But watch your spelling!

You will be asked to type any question you can think of. If you make a typing error, use the delete key. Your question can be as long as two lines of text, but must end with a question mark.

Pythia will give you her answer accompanied by appropriate sound and visual effects. You can then ponder her answer and either quit or ask another question. Contrary to the historic reputation of Delphi, all answers given here are PG-rated.

## Hints

The program uses a sophisticated parser and branch trees. In other words, the computer will *read* and interpret what you typed. Pythia's answers are keyed to the first three words of your question, while a parser index selects two topics from significant words which may appear anywhere in the question. In addition, random modifiers alter the response. You may be surprised how fast all this happens. Yet it provides for a wide range of possible answers that are responsive and specifically appropriate to the question which was asked.

Pythia, of course, is omniscient. Here are a few suggestions about what to ask:

Wife, husband, girlfriend or boyfriend. Babies, children and grandchildren. Love, marriage and sex. War, atomic bombs and explosions. Job or graduation. Death and taxes. Money or winning. Space, stars and planets. Baseball and the World Series, football and the Bowls. Friends and lovers.

For example, you may want to start your questions with: Will, shall, can, could, should; I, we, our, his, her, he, she; when, what, who, which, where, why, how, how much, how often, how many and other phrases.

If Pythia does not understand your spelling, she will let you know. Enter the temple of Apollo and ask.

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30008, Shreveport, LA 71130-0007, 1-800-831-2694.

### The Delphic Oracle

```
2 D$="THE DELPHIC ORACLE"'BCYF
4 POKE 657,128:PRINT CHR$(147)
  :GOSUB 358:GOTO 122'FVTJ
6 GET A$:PRINT TAB(5)CHR$(164)H6$;
  :IF A$=""THEN 6'HSJM
  STEP-64'NIUT
8 IF Q$<>""THEN 12'EEJJ
10 IF A$=CHR$(20) OR A$=CHR$(148) OR
   A$=W$ OR A$="?" THEN GOSUB 306
   :GOTO 6'NYQK
12 IF POS(X)=35 THEN PRINT W$
   :PRINT TAB(5);'HLIF
14 IF LEN(Q$)>=60 THEN PRINT
   :PRINT SPC(11) U2$ "LONG ENOUGH !"
   :RETURN'JOTM
16 IF RIGHT$(Q$,1)=W$ AND A$=W$ THEN
   A$="":GOSUB 306:GOTO 6'JUBM
18 IF A$="?" THEN IF RIGHT$(Q$,
   1)<>W$ THEN Q$=Q$+W$:PRINT "?"
   :RETURN'MSIR
20 IF A$="?" THEN PRINT "?"
   :RETURN'FDQC
22 IF A$=CHR$(20) THEN GOSUB 36;
   :PRINT A$;:GOTO 6'HPUH
24 IF A$>="A" AND A$<="Z" THEN 32'HGQI
26 IF A$>="0" AND A$<="9" THEN 32'HGQK
```

```
28 IF A$=W$ THEN 32'DGPJ
30 GOSUB 306:GOTO 6'CFFB
32 Q$=Q$+A$:PRINT A$;:J=J+1
   :IF J>43 THEN 6'ITYK
34 POKE V,LX+J:POKE V+1,HX-J
   :GOTO 6'GOIK
36 IF Q$="" THEN RETURN'ECFH
38 Q$=LEFT$(Q$,LEN(Q$)-1)'EMTM
40 IF POS(X)<=5 THEN PRINT W$ TAB(34)
   H3$ CHR$(164);'ISCJ
42 RETURN'BAQC
44 P$=Q$:N=1:GOSUB 46:G=LEN(G$(1))
   :FOR N=2 TO 9:P$=P1$:GOSUB 46:NEXT
   :GOTO 50'MLDT
46 FOR Z=1 TO LEN(Q$):IF MID$(P$,Z,
   1)<>W$ THEN NEXT'KRQQ
48 P1$=MID$(P$,Z+1):G$(N)=LEFT$(P$,
   Z-1):RETURN'HYSR
50 G1$=G$(1):G2$=G$(2):G3$=G$(3)
   :FOR J=1 TO 9:POKE V,LX+J
   :POKE V+1,HX+J'LSGR
52 IF LEFT$(G$(J),3)="BAB" OR
   LEFT$(G$(J),5)="CHILD" THEN
   E=4'IUJO
54 IF LEFT$(G$(J),5)="GRAND" THEN E=4
   :GOTO 100'GPIN
56 IF G$(J)="HUSBAND" OR G$(J)="WIFE"
   THEN E=5'GMJQ
58 IF G$(J)="LOVE" OR LEFT$(G$(J),
   4)="MARR" THEN E=5:GOTO 100'IULU
60 IF G$(J)="DEAD" OR G$(J)="DEATH"
   OR G$(J)="DIE" THEN E=6
   :GOTO 100'JVPP
62 IF LEFT$(G$(J),3)="TAX" THEN E=7
   :GOTO 100'GPLL
64 IF G$(J)="LOVER" THEN E=11'EIHL
66 IF RIGHT$(G$(J),5)="RIEND" AND
   LEN(G$(J))>6 THEN E=11
   :GOTO 100'JYGU
68 IF LEFT$(G$(J),3)="BOY" OR
   LEFT$(G$(J),3)="SON" THEN E=8
   :GOTO 100'JYOW
70 IF LEFT$(G$(J),3)="GIR" OR
   LEFT$(G$(J),8)="DAUGHTER" THEN E=9
   :GOTO 100'JYMR
72 IF LEFT$(G$(J),5)="FRIEN" THEN E=10
   :GOTO 100'GQLN
74 IF LEFT$(G$(J),3)="SEX" THEN E=12
   :GOTO 100'GQDP
76 IF G$(J)="GOD" THEN E=13
   :GOTO 100'FMRP
78 IF LEFT$(G$(J),5)="SPACE" OR
   LEFT$(G$(J),4)="STAR" THEN
   E=13'IVDX
80 IF LEFT$(G$(J),4)="MOON" OR
   LEFT$(G$(J),6)="PLANET" THEN E=13
   :GOTO 100'JABR
82 IF G$(J)="JOB" OR LEFT$(G$(J),
   5)="GRADU" THEN E=14:GOTO 100'IVJR
84 IF LEFT$(G$(J),3)="BOM" OR
   LEFT$(G$(J),3)="WAR" THEN E=1'IUFT
86 IF LEFT$(G$(J),4)="EXPL" OR
   G$(J)="ATOMIC" THEN E=1
   :GOTO 100'IUUW
88 IF G$(J)="PENNANT" OR RIGHT$(G$(J),
   4)="BOWL"THEN E=15'HRXX
90 IF RIGHT$(G$(J),4)="GAME" OR
   RIGHT$(G$(J),4)="RIES" THEN E=15
   :GOTO 100'JAAS
92 IF G$(J)="PRESIDENT" OR
   LEFT$(G$(J),3)="VOT" THEN E=2'HQPS
94 IF LEFT$(G$(J),4)="ELEC" THEN E=2
   :GOTO 100'GPCQ
96 IF G$(J)="MONEY" OR G$(J)="RICH"
   THEN E=3'GMAU
98 IF LEFT$(G$(J),6)="MILLIO" OR
   LEFT$(G$(J),3)="WIN" THEN E=3'IUSA
100 IF E1=0 THEN IF E>0 THEN J1=J:E1=E
   :E=0:GOTO 106'KTLF
102 IF E2=0 THEN IF E>0 THEN J2=J:E2=E
   :E=0'JPYG
104 IF E2=E1 THEN J2=0:E2=0:E=0'GOJG
106 IF J2=0 THEN NEXT'EDSE
108 J=9:IF E1<>1 AND E2<>1 THEN
   114'IMCK
110 POKE VI,2:PRINT H$H4$U6$:GOSUB 344
   :PRINT TAB(11)H3$CHR$(150)
   H5$W8$'GKMH
112 PRINT TAB(11)CHR$(28)W$W4$"W A R
   !"W4$:GOSUB 320:POKE VI,0
   :GOTO 118'GDVJ
114 IF J1+J2=0 THEN PRINT TAB(14) U$
   G1$ U5$ W$ "?":GOTO 120'HWHJ
116 PRINT TAB(12) U$ G$(J1) U5$ W$
   "!"'CQSG
118 IF J2>0 THEN PRINT TAB(42) U5$
   G$(J2) W$ "?"'FRAK
120 POKE V+21,0:RETURN'DGEA
122 RR%=RND(0)*3:R%=RND(0)*7'GOYG
124 PRINT H1$ CHR$(152) CHR$(146);
   'DOLF
126 I1=0:I2=35:I3=13:I9=0
   :GOSUB 332'FVSK
128 PRINT H$:I1=0:I2=15:I3=6:I9=8
   :GOSUB 330:PRINT H$ H4$ U$
   :GOSUB 344'IKTR
130 PRINT H$ TAB(240) TAB(244) U2$;
   'DODC
132 PRINT"TYPE" U$ W$ "YOUR QUESTION
   AND END WITH" W$ U2$ "?"'BJXL
134 PRINT TAB(10)"(A QUESTION MARK)"
   U$ H4$:GOSUB 302'DMPK
136 Q$="":J=0:E=0:PRINT
   :POKE 198,0'FPSK
138 LX=103:HX=110:C%=7:POKE V+21,1
   :POKE V+39,C%:POKE VI,14
   :GOSUB 6'JLRT
140 PRINT H$ TAB(240) TAB(244)
   W0$'DNTD
142 PRINT TAB(10) W9$:POKE V+21,0
   :PRINT H$ H4$ CHR$(31)
   :GOSUB 344'HBXK
144 PRINT TAB(11) W8$:POKE VI,6'DLAH
146 PRINT H$ TAB(240) TAB(51)
   CHR$(151) W$ "PYTHIA THINKS" W2$
   :GOSUB 314'FXEQ
148 LX=185:HX=80:C%=15:POKE V+39,C%
   :POKE V,LX:POKE V+1,HX
   :POKE V+21,1'KOAW
```

```
150 GOSUB 44:PRINT H$ TAB(240)
    TAB(51) W$ U2$ "PYTHIA SPEAKS
    :" W$'ETBK
152 IF G2$="YOU"THEN M$="MAYBE
    I"+W$+G1$+W$+",BUT I
    MIGHT"+T$(RR%):GOTO 244'KXST
154 IF G=0 OR G>6 THEN 244'FHKI
156 ON G GOTO 158,162,170,180,190,
    198'CYYL
158 IF G1$="I" THEN M$=M$(6)'EKDM
160 GOTO 244'BDJC
162 IF G1$="DO" OR G1$="IS" THEN
    226'FJYJ
164 IF G1$="WE" THEN M$=M$(6)'EKGK
166 IF G1$="MY" OR G1$="AM" THEN
    M$=M$(8)'GNKO
168 GOTO 244'BDJK
170 IF G1$="CAN"OR G1$="DID"OR
    G1$="ARE"OR G1$="WAS"OR
    G1$="HAS"THEN 226'LSXR
172 IF G1$="WHY" OR G1$="HOW" THEN
    202'FJDK
174 IF G1$="WHO" THEN IF G3$="WIN"
    THEN IF E2=15 THEN M$=M$(21)
    :GOTO 244'LWXT
176 IF G1$="WHO" THEN 202'DGFM
178 GOTO 244'BDJL
180 IF G1$="WILL" OR G1$="DOES" OR
    G1$="WERE" OR G1$="HAVE" THEN
    226'JPVQ
182 IF G1$="WHEN" THEN 240'DGAJ
184 IF G1$="WHAT" THEN 202'DGAL
186 IF G1$="TELL"THEN M$=M$(7)'EKIO
188 GOTO 244'BDJM
190 IF G1$="COULD" OR G1$="WOULD" OR
    G1$="SHALL" THEN 226'HMEP
192 IF G1$="WHICH" OR G1$="WHOSE"
    THEN M$=M$(23)'GOCP
194 IF G1$="WHERE" THEN M$=M$(17)'ELBO
196 GOTO 244'BDJL
198 IF G1$="SHOULD" THEN 226'DGNQ
200 GOTO 244'BDJW
202 IF G2$="IS"OR G2$="CAN"OR
    G2$="DO"OR G2$="DOES"THEN
    M$=T$(RR%)+M$(13)'LCHO
204 IF G2$="DID" OR G2$="WOULD" THEN
    M$=M$(13)+T$(RR%)'HVEL
206 IF G2$="WAS" THEN M$=C$(3)'EKYH
208 IF G2$="WILL" THEN M$=C$(0)'EKYJ
210 IF G2$="SHALL" OR G2$="SHOULD"
    THEN M$=M$(18)+T$(RR%)+"BE
    MADE"'IVWL
212 IF G2$="MANY" THEN M$="THERE ARE
    MILLIONS OF"+W$+G3$'GKIM
214 IF G2$="OFTEN" THEN M$=M$(7)'EKEH
216 IF G2$="LONG" THEN
    M$=T$(RR%)+M$(16)'FSKL
218 IF G2$="MUCH" THEN
    M$=T$(RR%)+M$(19)'FSKN
220 IF G2$="HAVE" OR G2$="HAS" THEN
    M$=M$(1)'GNGG
222 IF G2$="COULD" THEN M$=M$(3)'EKVG
224 GOTO 244'BDJD
226 IF G2$="MY" OR G2$="OUR" THEN
    M$="YOUR"+W$+G3$+W$+G1$+T$(RR%)
    :GOTO 244'MEIV
228 IF G2$="HIS" OR G2$="HER" THEN
    238'FJEM
230 IF G2$="THE" OR G2$="A" OR
    G2$="AN" THEN 238'HMKH
232 IF G2$="HE" OR G2$="SHE" THEN
    M$=G2$+W$+G1$+T$(RR%)+G3$
    :GOTO 244'LFDP
234 IF G2$="I" OR G2$="WE" THEN
    M$="YOU"+W$+G1$+T$(RR%)+M$(14)
    :GOTO 244'LFUS
236 M$=G2$+W$+G1$+T$(RR%)
    :GOTO 244'FVUM
238 M$=G2$+W$+G3$+W$+G1$+T$(RR%)
    :GOTO 244'HBXR
240 M$=T$(RR%)+M$(16):IF R%<4 THEN
    M$=M$+W$+",BUT"+W$+M$(2)
    :GO TO 244'MLNQ
242 M$=M$+W$+",BUT"+W$+M$(3)'FNPJ
244 IF E1=1 OR E2=1 THEN 248'FJAJ
246 GOSUB 310'BDHH
248 IF M$="" THEN M$=M$(20)
    :IF J1+J2=0 THEN M$=M$(9)
    :GOSUB 318'KCMU
250 PRINT H$ U2$ TAB(160) TAB(242);
    'DOCF
252 FOR F=1 TO LEN(M$):IF POS(X)>=36
    THEN PRINT CHR$(45)
    :PRINT TAB(3);'NUWP
254 PRINT H5$ MID$(M$,F,1);
    :FOR T=1 TO 80:NEXT:NEXT
    :POKE 198,0:PRINT'JBGP
256 IF J1+J2=0 THEN 296'EIKL
258 E=E1:PRINT H3$ U$:GOSUB 262
    :IF E2>0 THEN E=E2:PRINT H3$ U2$
    :GOSUB 262'JGEV
260 GOTO 296'BDQD
262 ON E GOTO 264,266,268,270,272,274,
    276,278,280,282,284,286,288,290,
    292'CKAR
264 N$=M$(RR%):GOTO 294'CNRK
266 N$=M$(11):GOTO 294'CMTL
268 N$=M$(2+RR%):GOTO 294'DOLO
270 N$=M$(5):GOTO 294'CLYG
272 N$=M$(7):GOTO 294'CLBI
274 N$=M$(12):GOTO 294'CMUK
276 N$=M$(RR%):GOTO 294'CNRN
278 N$=U$+M$(10)+U2$:GOTO 294'ERHR
280 N$=CHR$(150)+M$(10)+U2$
    :GOTO 294'FUKL
282 N$=M$(1+RR%):GOTO 294'DOKK
284 N$=M$(8):GOTO 294'CLCL
286 N$=M$(15):GOTO 294'CMXN
288 N$=M$(17):GOTO 294'CMAP
290 N$=M$(22):GOTO 294'CMVI
292 N$=M$(23)'BIYJ
294 PRINT TAB(2) N$:RETURN'DFIL
296 IF M$=M$(9) THEN PRINT TAB(2)
    CHR$(153) H5$ D$(RR%)
    :GOTO 300'HDRV
298 PRINT TAB(2) H5$ CHR$(159) "BUT"
    W$ C$(R%)'DSJT
300 PRINT TAB(240):GOTO 532'DIMA
302 POKE S+24,15:POKE S+1,110
    :POKE S+5,9:POKE S+6,9'IXAJ
```

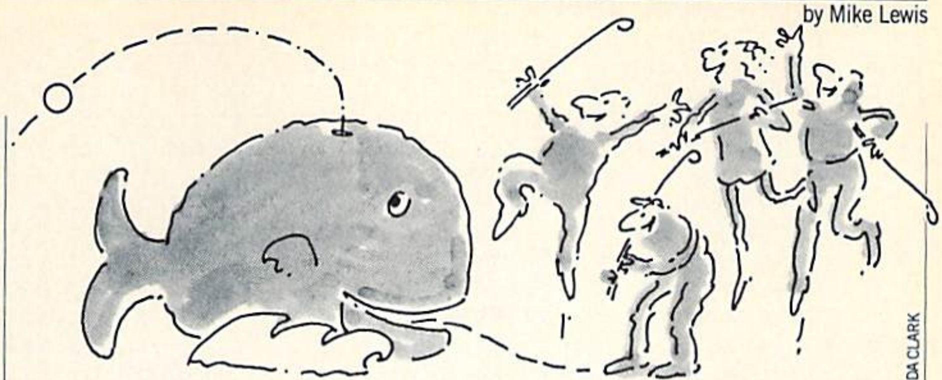
```
304 POKE S+4,17:POKE S+4,16
    :RETURN'FMJG
306 POKE S+6,240:POKE S+1,4:POKE S+5,0
    :POKE S+4,33:FOR T=1024 TO 512
    STEP-64'NIUS
308 POKE S+1,T/256:POKE S,T AND 255
    :NEXT:POKE S+4,0:RETURN'JVUP
310 POKE VI,4:FOR T=1 TO 300:NEXT'FLWD
312 GOSUB 316:POKE VI,0:POKE 198,0
    :RETURN'EPMF
314 P=17:E$="424242":GOTO 322'DKFH
316 P=33:E$="251331421502421502"
    :GOTO 322'DKEL
318 P=129:E$="111455":GOTO 322'DLGL
320 P=129:E$="11145580810110110110110
    1101"'CHYH
322 POKE S+6,96:POKE S+24,15
    :FOR A=1 TO 18 STEP 3'ISRJ
324 POKE S+1,VAL(MID$(E$,A,2))'ENKI
326 POKE S+4,P:FOR B=1 TO
    80*VAL(MID$(E$,A+2,1)):NEXT'KVPP
328 POKE S+4,P-1:NEXT:RETURN'FHNL
330 FOR I=0 TO I9:PRINT CHR$(29);
    :NEXT'GLFG
332 PRINT W$ CHR$(117);:FOR I=0 TO I2
    :PRINT CHR$(99);:NEXT
    :PRINT CHR$(105)'KBRN
334 FOR I=0 TO I3:IF I9=8 THEN FOR
    J=0 TO I9:PRINT CHR$(29);
    :NEXT J'MUOQ
336 PRINT W$ CHR$(125) SPC(I2+1)
    CHR$(125):NEXT I'GSHN
338 IF I9=8 THEN FOR J=0 TO I9
    :PRINT CHR$(29);:NEXT J'JPIR
340 PRINT W$ CHR$(106);:FOR I=0 TO I2
    :PRINT CHR$(99);:NEXT'IULK
342 PRINT CHR$(107):RETURN'DGRG
344 FOR T=1 TO 7:PRINT TAB(11) H5$ W8$
    :NEXT'GONL
346 PRINT H$ H4$ H4$:PRINT TAB(17) Z$
    Z1$'DRUM
348 PRINT TAB(16) Z$ W2$ Z1$
    :PRINT TAB(15) Z$ W4$ Z1$'EXJQ
350 PRINT TAB(13) Z$ W5$ Z1$
    :PRINT TAB(12) Z$ W6$ Z1$;'EYRJ
352 PRINT U3$ H5$ W2$ U$ W2$'BOJH
354 PRINT TAB(11) CHR$(149) H5$ W7$
    U4$ W3$'DURM
356 PRINT H$ TAB(240) TAB(64) U$ "?"
    :RETURN'EMEN
358 DIM M$(23),U$(11),C$(7),D$(3),
    G$(10),T$(3)'BNSR
360 S=54272:VI=53280:POKE VI,8
    :POKE VI+1,8:S%=832:V=53248'HNWQ
362 H1$=CHR$(147):H$=CHR$(19)'EPUK
364 H3$=CHR$(145):H4$=CHR$(17)'EQPN
366 H5$=CHR$(18):H6$=CHR$(157)'EQXP
368 U$=CHR$(154):U2$=CHR$(5)'EORQ
370 U3$=CHR$(158):U4$=CHR$(30)'EQOK
372 U5$=CHR$(155):U6$=CHR$(28)'EQWM
374 Z$=CHR$(169):Z1$=CHR$(127)'EQCO
376 W$=CHR$(32):FOR T=0 TO 32
    :W0$=W0$+W$:NEXT'IVXT
378 I1=0:I2=35:I3=21:I9=0
    :PRINT H$ U3$ U5$;:GOSUB 332'GGXW
380 FOR T=0 TO 23:READ M$(T):NEXT'FLHK
382 FOR T=0 TO 11:READ U$(T):NEXT'FLMM
384 W2$=LEFT$(W0$,2)'CKDM
386 W3$=LEFT$(W0$,3)'CKFO
388 W4$=LEFT$(W0$,4)'CKHQ
390 W5$=LEFT$(W0$,7)'CKLJ
392 W6$=LEFT$(W0$,9)'CKOL
394 W7$=LEFT$(W0$,13)'CLIN
396 W8$=LEFT$(W0$,16)'CLMP
398 W9$=LEFT$(W0$,18)'CLPR
400 M$(9)=U4$+W4$+M$(9)+W2$+U2$'FWEG
402 M$(20)=U4$+M$(20)'CPFE
404 M$(15)=U3$+M$(15)'CPMG
406 U$(4)=U$(4)+W$+H5$+W$+"PROPHECY."
    'FRQN
408 PRINT H$ H5$ TAB(90) D$'CKQJ
410 PRINT:FOR T=0 TO 4:PRINT TAB(3)
    U$(T):NEXT'HNOG
412 PRINT:FOR T=5 TO 6:PRINT TAB(2)
    U$(T):NEXT'HNUI
414 PRINT:PRINT TAB(3) U$(7)'DIHG
416 FOR T=8 TO 11:PRINT TAB(2) U$(T)
    :NEXT'GNLL
418 PRINT:PRINT:GOSUB 428
    :POKE 198,0'ELJL
420 PRINT TAB(5) U3$ "PRESS <SPACE
    BAR> TO CONTINUE"'CFVK
422 PRINT H3$ H3$:IF PEEK(162)AND 64
    THEN PRINT TAB(5) H5$;
    :GOSUB 302'IYRL
424 IF PEEK(203)<>60 THEN 420'FKHJ
426 POKE VI,0:POKE VI+1,0:RETURN'ELBL
428 FOR I=0 TO 14:POKE S%+I,0:NEXT
    :POKE 2040,13:POKE S%+1,30'JBBS
430 POKE S%+4,63:POKE S%+7,63
    :POKE S%+10,63:POKE S%+13,30'IEQM
432 D$(0)=W4$+"PLEASE REWORD YOUR
    QUESTION."+W3$'DLUP
434 D$(1)=W4$+"PLEASE USE YOUR
    DICTIONARY!"+W4$'DLJQ
436 D$(2)=W4$+"PLEASE CHECK YOUR
    SPELLING!"+W4$'DLVS
438 C$(0)="WHAT WILL BE WILL
    BE..."'BFEQ
440 C$(1)="SO IT SHALL PASS..."'BFBI
442 C$(2)="QUE SERRA SERRA..."'BFPK
444 C$(3)="THE PAST IS
    PROLOGUE..."'BFNN
446 C$(4)="ALL ROADS LEAD TO
    ROME..."'BFAP
448 C$(5)=H6$+H6$+H6$+H6$+"THE FUTURE
    IS CLOUDY TODAY..."'FREY
450 C$(6)="THERE ARE BILLIONS OF
    STARS"'BFFM
452 T$(0)=W$'BHMH
454 T$(1)=W$+"NOT"+W$'DJIL
456 T$(2)=W$+"PERHAPS"+W$'DJRP
458 RETURN'BAQL
460 DATA IT IS A POSSIBILITY'BQMJ
462 DATA YOU MAY NEVER KNOW'BPML
464 DATA THERE IS ALWAYS A CHANCE'BUYO
466 DATA NEVER SAY NEVER'BNLO
468 DATA YOU SHOULD PLAY THE
    LOTTO!'BWZT
470 DATA A SECRET WISH MIGHT BE
```

*Continued on page 128*

by Mike Lewis

# Commodore Sixty-Fore

*for the Commodore 64*




Commodore Sixty-Fore is an exciting miniature golf game for the Commodore 64. Sixty-Fore will provide you and your friends with hours of golfing enjoyment, even if it's raining.

Sixty-Fore has nine holes, and a couple of them may take time to master. Of course, the game is more fun with more players—you can have up to four per game.

Type in the program and save it. After you run it, the title screen will appear for ten seconds while the sprite graphics are being set up. The program will then ask you to enter the number of players by typing a digit for one, two, three or four players.

The screen will set up a course with one ball and hole. The golf club circles around the ball. At the right of the screen, you will see all of the necessary information, such as the hole number, the par for the hole, the score for all four players, the round of play, instructions and which player is up.

When the golf club is at the desired angle, press the F1 key. Then enter the speed at which you want the ball to travel. (Zero is the slowest, nine the fastest.) The ball will move and come to rest, and the next player takes a turn.

With each new hole the screen will change colors, and a new course configuration will be set up. When all nine holes are finished, the final screen will show the total score for each player in terms of par for the course. The lower the score, the better you played. The lowest score wins. The final screen will also ask you if you want to play again. Of course you'll want to answer "yes."

Commodore Sixty-Fore will provide you with hours of miniature golf action, rain or shine, night or day. And best of all you don't have to pay for the course. Gather up your friends and enjoy! ■

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30008, Shreveport, LA 71130-0007, 1-800-831-2694.

### Commodore Sixty-Fore

```
10 POKE 53280,11:POKE 53281,0
   :PRINT "[CLEAR,WHITE]";'DSDC
20 PRINT CHR$(14);CHR$(8);"[DOWN7]";
   TAB((39-22)/2);"[SHFT C]OMMODORE
   [SHFT S]IXTY - [SHFT F,SHFT O,
   SHFT R,SHFT E]"'GTGP
30 PRINT:PRINT TAB((39-2)/2);"[SHFT B]
   Y"'FJJF
40 PRINT:PRINT TAB((39-10)/2);"
   [SHFT M]IKE [SHFT L]EWIS"'FKMI
50 PRINT:PRINT TAB((39-18)/2);"[RVS]
   <<< [SHFT P]LEASE [SHFT W]
   AIT>>>"'FKAL
120 FOR SP=13312 TO 14592 STEP 64'EOOC
130 FOR SD=0 TO 15'DFEB
140 POKE SP+SD,0'CGOB
150 NEXT SD'BCZB
160 FOR SD=16 TO 46'DGME
170 READ DA:POKE SP+SD,DA'DKNG
180 NEXT SD'BCZE
190 FOR SD=47 TO 62'DGOH
200 POKE SP+SD,0'CGOX
210 NEXT SD'BCZX
220 NEXT SP'BCLY
230 POKE 53248+39,0:POKE 53248+40,0
    :POKE 53248+41,0:POKE 53248+42,
    13'IPJM
240 POKE 53248+43,1:POKE 53248+44,
    6'ETKG
270 PRINT "[CLEAR,SHFT E]
    NTER NUMBER OF PLAYERS (1-4)"'BALM
280 GET P$:IF P$<"1" OR P$>"4" THEN
    280'GKAK
290 P=VAL(P$)'CFOH
320 SM=1024:CM=55296:VI=53248:PO=2040
    :H=0:DP=213'GNBL
330 S(1)=4:B(1)=3:S(2)=10:B(2)=2
    :S(3)=14:B(3)=6'GMEL
340 S(4)=5:B(4)=13:S(5)=8:B(5)=9
    :S(6)=11:B(6)=0'GMEM
350 S(7)=4:B(7)=3:S(8)=10:B(8)=2
    :S(9)=14:B(9)=6'GMPN
360 P(1)=3:P(2)=4:P(3)=5:P(4)=4:P(5)=3
    :P(6)=6:P(7)=4:P(8)=7:P(9)=4'JDLU
363 BV(1)=4:BV(2)=8:BV(3)=16
    :BV(4)=32'EECP
365 X(1)=30:X(2)=104:X(3)=30:X(4)=30
    :X(5)=56:X(6)=120:X(7)=112
    :X(8)=32'IIXA
367 X(9)=32:Y(1)=135:Y(2)=50:Y(3)=194
    :Y(4)=202:Y(5)=50:Y(6)=50
    :Y(7)=54'IIAC
368 Y(8)=218:Y(9)=146:HX(1)=154
    :HY(1)=170:HX(2)=144:HY(2)=170
    :HX(3)=48'HJED
369 HY(3)=114:HX(4)=208:HY(4)=180
    :HX(5)=180:HY(5)=125:HX(6)=72
    :HY(6)=210'HLJF
370 HX(7)=75:HY(7)=170:HX(8)=200
    :HY(8)=66:HX(9)=120:HY(9)=202'GBLT
371 RS$="[RIGHT31]"'BDDJ
372 DD$="[HOME]"+RS$+"[DOWN16,SHFT P]
    RESS [SHFT F]1[DOWN,LEFT8]"'DGBS
```

```
373 DD$=DD$+"WHEN[DOWN,LEFT4]DESIRED
    [DOWN,LEFT7]"'CGUT
374 DD$=DD$+"DIREC-[DOWN,LEFT6]
    TION IS[DOWN,LEFT7]RECEIVED"'CGRY
375 PU$="[HOME]"+RS$+"[DOWN22,SHFT P]
    LAYER[DOWN,LEFT6]IS UP[UP,RIGHT]
    "'DGBW
420 PRINT "[CLEAR,WHITE]";:H=H+1'DFUD
422 ON H GOSUB 7120,7220,7320,7420,
    7520,7620,7720,7820,7920'CUEM
425 F(1)=0:F(2)=0:F(3)=0:F(4)=0'EXQM
430 FOR LO=0 TO 24:POKE SM+(40*LO)+29,
    93:POKE CM+(40*LO)+29,1
    :NEXT LO'MKFQ
435 POKE 53280,B(H):POKE 53281,
    S(H)'CVOL
440 PRINT "[HOME]";RS$;"[SHFT H]OLE
    [SPACE2]";H'BHOG
450 PRINT "[DOWN]";RS$;"[SHFT P]AR
    [SPACE3]";P(H)'BKKH
460 PRINT "[DOWN,RIGHT]";RS$;"[SHFT S]
    CORE:"'BFPI
470 PRINT "[DOWN,RIGHT]";RS$;"#1 ";
    SC(1)'BLGI
480 PRINT "[RIGHT]";RS$;"#2 ";
    SC(2)'BLQJ
490 PRINT "[RIGHT]";RS$;"#3 ";
    SC(3)'BLSK
500 PRINT "[RIGHT]";RS$;"#4 ";
    SC(4)'BLUC
510 PRINT "[DOWN,RIGHT]";RS$;"[SHFT R]
    OUND:"'BFCE
520 PRINT "[DOWN,RIGHT2]";RS$;0
    :R=0'CJRE
570 R=R+1:PRINT "[HOME]";RS$;"[DOWN15,
    RIGHT2]";R:POKE PO+1,208'FTTP
572 POKE VI+21,PEEK(VI+21) OR 2'FMQO
575 POKE VI+2,HX(H):POKE VI+3,
    HY(H)'ETQS
580 FOR PL=1 TO P:IF F(PL)=1 THEN
    1080'GPMO
590 IF R=1 THEN POKE PO+1+PL,208+PL
    :POKE VI+(4+(PL-1)*2),X(H)'MFOW
600 IF R=1 THEN POKE VI+(5+(PL-1)*2),
    Y(H):POKE VI+21,PEEK(VI+21)OR(BV
    (PL))'NNQR
610 IF R=1 THEN X=X(H):Y=Y(H)'FNCH
620 IF R=1 THEN PX(PL)=X:PY(PL)=Y'FRYJ
630 X=PX(PL):Y=PY(PL)'CPVI
670 PRINT DD$;PU$;PL'BKGK
680 POKE VI+21,PEEK(VI+21) OR 1
    :POKE VI,X:POKE VI+1,Y'IXKS
685 DR=0'BDTO
690 FOR DL=213 TO 228:POKE PO,DL'EOVO
700 FOR DE=1 TO 6:D$="":GET D$'FKSG
710 IF D$="[F1]" THEN DR=DL-212'FJIH
720 IF DR=1 THEN DX=2:DY=0
    :GOTO 900'GONK
730 IF DR=2 THEN DX=1.5:DY=.5
    :GOTO 900'GRNL
740 IF DR=3 THEN DX=1:DY=1
    :GOTO 900'GOPM
750 IF DR=4 THEN DX=.5:DY=1.5
    :GOTO 900'GRPN
760 IF DR=5 THEN DX=0:DY=2
    :GOTO 900'GORO
770 IF DR=6 THEN DX=-.5:DY=1.5
    :GOTO 900'HRHQ
780 IF DR=7 THEN DX=-1:DY=1
    :GOTO 900'HOPQ
790 IF DR=8 THEN DX=-1.5:DY=.5
    :GOTO 900'HRJS
800 IF DR=9 THEN DX=-2:DY=0
    :GOTO 900'HORJ
810 IF DR=10 THEN DX=-1.5:DY=-.5
    :GOTO 900'ISPM
820 IF DR=11 THEN DX=-1:DY=-1
    :GOTO 900'IPXM
830 IF DR=12 THEN DX=-.5:DY=-1.5
    :GOTO 900'ISRO
840 IF DR=13 THEN DX=0:DY=-2
    :GOTO 900'HPEO
850 IF DR=14 THEN DX=.5:DY=-1.5
    :GOTO 900'HSEP
860 IF DR=15 THEN DX=1:DY=-1
    :GOTO 900'HPGQ
870 IF DR=16 THEN DX=1.5:DY=-.5
    :GOTO 900'HSGR
880 NEXT DE,DL'BFXL
890 GOTO 690'BDOM
900 PRINT LEFT$(DD$,48);"[SPACE8,DOWN,
    LEFT8,SPACE8,DOWN]";'CKAN
905 PRINT"[LEFT8,SPACE8,DOWN,LEFT8]";
    'BBVT
910 PRINT "[SPACE8,DOWN,LEFT8,SPACE8,
    DOWN]";'BBEL
915 PRINT "[LEFT8,SPACE8,DOWN,LEFT8]";
    'BBVU
920 PRINT LEFT$(DD$,48);"[SHFT E]NTER
    [DOWN,LEFT5]SPEED[DOWN,LEFT5]
    (0-9)"'CJCS
930 GET S$:IF S$<"0" OR S$>"9" THEN
    930'GKPM
940 PRINT LEFT$(DD$,48);"[SPACE8,DOWN,
    LEFT8,SPACE8,DOWN]";'CKAR
945 PRINT"[LEFT8,SPACE8,DOWN,LEFT8]";
    'BBVX
950 PRINT "[SPACE8,DOWN,LEFT8,SPACE8,
    DOWN,LEFT8,SPACE8,DOWN,LEFT8]";
    'BBOB
960 S=VAL(S$):S=20+S*25'FMQP
1020 FOR SL=S TO 2 STEP -2'FFDY
1030 X=X+DX:POKE VI+(4+(PL-1)*2),
     X'HSCF
1040 GOSUB 1520:IF TC<>32 THEN
     1030'FNDC
1050 Y=Y+DY:POKE VI+(5+(PL-1)*2),
     Y'HSHH
1055 GOSUB 1720:IF TC<>32 THEN
     1050'FNHI
1060 IF PEEK(VI+30) AND BV(PL)=BV(PL)
     THEN GOSUB 6020'HWBI
1070 NEXT SL'BCHB
1075 PX(PL)=X:PY(PL)=Y'CPVK
1080 IF F(1)+F(2)+F(3)+F(4)=P AND H<9
     THEN 420'IWIK
1090 NEXT PL'BCED
1095 IF H=9 AND F(1)+F(2)+F(3)+F(4)
     <>P THEN 570'JWKR
```

```
1100 IF H<9 THEN 570'DFCW
1220 PRINT "[CLEAR,DOWN4]"'BAMX
1230 PRINT TAB(14);"[SHFT F]INAL
     [SHFT S]CORE"'CEVE
1240 PRINT TAB(14);"-----------"'CEEC
1250 PRINT:PRINT  TAB(14);"[SHFT P]
     LAYER #1[SPACE2]";SC(1)'DLBH
1260 PRINT TAB(14);"[SHFT P]LAYER #2
     [SPACE2]";SC(2)'CKXH
1270 PRINT TAB(14);"[SHFT P]LAYER #3
     [SPACE2]";SC(3)'CKAI
1280 PRINT TAB(14);"[SHFT P]LAYER #4
     [SPACE2]";SC(4)'CKCJ
1290 PRINT:PRINT:PRINT TAB(14);"[RVS,
     SHFT P]LAY AGAIN?"'EGJL
1300 GET A$:IF A$="N" THEN PRINT "
     [CLEAR]":END'GGPB
1310 IF A$="Y" THEN RUN'ECTA
1320 GOTO 1300'BEBY
1520 TX=INT((X-13)/8):TY=INT((Y-41)/8)
     :TC=PEEK(SM+TX+(40*TY))'NLFR
1530 IF TC=32 THEN RETURN'EEJE
1540 DX=-DX:X=X+3*DX'FKKI
1550 RETURN'BAQD
1720 TX=INT((X-13)/8):TY=INT((Y-41)/8)
     :TC=PEEK(SM+TX+(40*TY))'NLFT
1730 IF TC=32 THEN RETURN'EEJG
1740 DY=-DY:Y=Y+3*DY'FKPK
1750 RETURN'BAQF
6020 IF (PEEK (VI+30) AND 2)=0 THEN
     RETURN'HKVG
6025 POKE VI+21,PEEK(VI+21) AND
     (255-BV(PL))'GWYN
6030 SC(PL)=SC(PL)+(R-P(H))'DTCH
6040 F(PL)=1:SL=2'CKKF
6050 RETURN'BAQD
7120 PRINT "[HOME,DOWN9,SHFT *12,
     CMDR X,UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,UP,LEFT,SHFT -,UP,LEFT,
     CMDR A,SHFT *6,CMDR S]";'BBPF
7125 PRINT "[DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -]";'BBXP
7130 PRINT "[DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     HOME,DOWN13,SHFT *12,CMDR S]";
     'BBFB
7133 PRINT "[DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     CMDR Z]";'BBAO
7135 PRINT "[SHFT *6,CMDR X,UP,LEFT,
     SHFT -]"'BAJP
7140 PRINT "[HOME,DOWN11,RIGHT14,
     SHFT -,SPACE2,SHFT -,UP2,LEFT3,
     SHFT *2,DOWN4,LEFT2,SHFT *2]
     "'BAWQ
7150 PRINT "[HOME,DOWN9,CMDR A,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     CMDR Z]"'BAYM
7160 RETURN'BAQG
7220 PRINT"[HOME,DOWN4,RIGHT2,CMDR A,
     SHFT *5,CMDR X,UP,LEFT,SHFT -,UP,
     LEFT,SHFT -,UP,LEFT,SHFT -,UP,
     LEFT,SHFT -,DOWN7,LEFT,CMDR A,
     SHFT *5,CMDR X,UP,LEFT,SHFT -,UP,
     LEFT,SHFT -,UP,LEFT,SHFT -,UP,
     LEFT,SHFT -,UP,LEFT,SHFT -,UP,
     LEFT,SHFT -,UP,LEFT,SHFT -]"'BAON
7230 PRINT"[HOME,DOWN19,RIGHT4,CMDR Z,
     SHFT *12,CMDR X,UP,LEFT,SHFT -,
     UP,LEFT,SHFT -,UP,LEFT,SHFT -,UP,
     LEFT,CMDR S,LEFT2,SHFT *,LEFT2,
     SHFT *,LEFT2,SHFT *,LEFT2,CMDR Z]
     "'BAVH
7240 PRINT "[HOME,DOWN18,RIGHT4,
     SHFT -,UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,UP,LEFT,CMDR A,SHFT *3,
     CMDR X]";'BBER
7245 PRINT "[UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,UP,LEFT,CMDR S,HOME,DOWN5,
     RIGHT2,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -]";'BBUW
7250 PRINT "[DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,CMDR Z,SHFT *5]"'BAWQ
7260 PRINT "[HOME,DOWN8,RIGHT8,SHFT -,
     DOWN,LEFT,CMDR Z,SHFT *4,CMDR S,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -]
     "'BACW
7270 PRINT "[HOME,RIGHT8,CMDR A,
     SHFT *5,CMDR S]"'BAJO
7280 RETURN'BAQJ
7320 PRINT "[HOME,DOWN8,CMDR A,
     SHFT *7,CMDR S,DOWN,LEFT,SHFT -,
     DOWN,LEFT,CMDR Z,SHFT *17,CMDR S,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -]";'BBFM
7330 PRINT "[DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -]"'BAON
7340 PRINT "[HOME,DOWN9,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,CMDR Z,
     SHFT *7,CMDR X,UP,LEFT,SHFT -,UP,
     LEFT,CMDR A,SHFT *13,CMDR S]";
     'BBUO
7345 PRINT "[DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -]"'BADO
7350 PRINT "[HOME,DOWN17,CMDR A,
     SHFT *21,CMDR X]"'BARB
7360 PRINT "[HOME,DOWN18,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     CMDR Z,SHFT *25,CMDR X]"'BALL
```

```
7370 RETURN'BAQJ
7420 PRINT "[HOME,CMDR A,SHFT *25,
     CMDR S]";'BBGB
7425 PRINT "[DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -]";'BBLE
7430 PRINT "[DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,HOME,RIGHT]";
     'BBXU
7435 PRINT "[DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -]";'BBLF
7440 PRINT "[DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,CMDR Z,SHFT *2,CMDR X]
     ";'BBQX
7445 PRINT "[UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,UP,LEFT,SHFT -,UP,LEFT;
     SHFT -,UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,UP,LEFT,SHFT -,UP,LEFT]";
     'BBHL
7450 PRINT "[CMDR A,SHFT *3,CMDR S,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     CMDR Z,SHFT *18,CMDR X,HOME]
     "'BALU
7460 PRINT "[RIGHT19,DOWN2,SHFT -,
     DOWN,LEFT,SHFT -,DOWN3,LEFT4,
     SHFT -,DOWN,LEFT,SHFT -,RIGHT5,
     SHFT -,UP,LEFT,SHFT -,DOWN4,
     LEFT4,SHFT -,DOWN,LEFT,SHFT -]
     "'BAHD
7470 RETURN'BAQK
7520 PRINT"[HOME,RIGHT3,CMDR A,
     SHFT *3,CMDR S,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,CMDR Z,
     SHFT *14,CMDR S]";'BBJG
7525 PRINT"[DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -]"'BAPW
7530 PRINT"[HOME,DOWN14,RIGHT3,CMDR Z,
     SHFT *18,CMDR X]";'BBQY
7535 PRINT"[HOME,RIGHT3,DOWN,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -]";'BBWX
7540 PRINT"[DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -]"'BAFR
7550 PRINT "[HOME,DOWN8,RIGHT8,
     SHFT *2,SPACE6,SHFT *2,DOWN2,
     LEFT14,SPACE8,SHFT *2,DOWN2]";
     'BBHB
7560 PRINT "[LEFT6,SHFT *2,SPACE6,
     SHFT *2]"'BARS
7570 RETURN'BAQL
7620 PRINT"[HOME,RIGHT11,CMDR A,
     SHFT *3,CMDR S,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT]";'BBVT
7625 PRINT"[CMDR Z,SHFT *8,CMDR S,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -]";'BBUG
7630 PRINT "[DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,HOME,DOWN,RIGHT11,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -]"'BAPX
7640 PRINT "[HOME,DOWN5,RIGHT2,CMDR A,
     SHFT *8,CMDR X]";'BBLR
7645 PRINT "[HOME,DOWN6,RIGHT2,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -]";'BBPI
7650 PRINT "[DOWN,LEFT,CMDR Z,SHFT *8,
     CMDR S,DOWN,LEFT,CMDR X,LEFT2,
     SHFT *,LEFT2,SHFT *,LEFT2,SHFT *,
     LEFT2,SHFT *,LEFT2,CMDR A,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     CMDR Z,SHFT *13,CMDR X,UP,LEFT,
     SHFT -]";'BBKX
7660 PRINT "[UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,UP,LEFT,CMDR S,LEFT2,
     SHFT *,LEFT2,SHFT *,LEFT2,SHFT *,
     LEFT2,SHFT *,LEFT2,CMDR Z,UP,
     LEFT,CMDR A,SHFT *8,CMDR X]"'BAZL
7670 PRINT "[HOME,DOWN8,RIGHT6,CMDR A,
     SHFT *13,CMDR S,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
```

```
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,CMDR X]"'BABK
7680 PRINT "[HOME,DOWN9,RIGHT6,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,CMDR Z,SHFT *13]"'BAMJ
7690 RETURN'BAQO
7720 PRINT "[HOME,RIGHT10,CMDR A,
     SHFT *3,CMDR S,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,CMDR Z,SHFT *3,CMDR S,DOWN,
     LEFT,SHFT -,DOWN,LEFT,CMDR W,
     LEFT2,SHFT *,LEFT2,SHFT *,LEFT2,
     CMDR A,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -]";'BBGL
7730 PRINT "[RIGHT2,UP,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,CMDR W,LEFT2,SHFT *,
     LEFT2,SHFT *,LEFT2,CMDR A,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     RIGHT2,UP,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,CMDR X]"'BAMJ
7740 PRINT "[HOME,DOWN,RIGHT10,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,CMDR X,LEFT2,SHFT *,LEFT2,
     SHFT *,LEFT2,SHFT *,LEFT2,CMDR A,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,CMDR Q,SHFT *2,CMDR X,UP,
     LEFT,SHFT -,UP,LEFT,SHFT -]";
     'BBCO
7750 PRINT"[DOWN3,LEFT4,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,CMDR Q,SHFT *2,CMDR X,
     UP,LEFT,SHFT -,UP,LEFT,SHFT -,
     DOWN3,LEFT4,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,CMDR Z,SHFT *2,CMDR E,UP,
     LEFT,SHFT -,UP,LEFT,SHFT -,DOWN2,
     SHFT *8]"'BAIV
7760 RETURN'BAQM
7820 PRINT "[HOME,CMDR A,SHFT *9,
     CMDR R,SHFT *9,CMDR R,SHFT *4,
     CMDR S,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -]";'BBFS
7825 PRINT "[DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,HOME,DOWN,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -]";'BBQS
7830 PRINT "[DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -]";
     'BBON
7840 PRINT "[DOWN,LEFT,CMDR Z,SHFT *4,
     CMDR E,SHFT *9,CMDR E,SHFT *9,
     CMDR X,HOME,DOWN5,RIGHT5,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -]";'BBOS
7850 PRINT "[DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,RIGHT4,UP4,SHFT -,UP,
     LEFT,SHFT -,UP,LEFT,SHFT -,UP,
     LEFT,SHFT -,UP,LEFT,SHFT -]";
     'BBPS
7860 PRINT "[UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,RIGHT4,DOWN4,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -]";
     'BBVW
7870 PRINT "[DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,RIGHT4,
     UP4,SHFT -]";'BBLS
7880 PRINT "[UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,UP,LEFT,SHFT -,UP,LEFT,
     SHFT ¬,UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,UP,LEFT,SHFT -,UP,LEFT,
     SHFT -]";'BBHC
7890 RETURN'BAQQ
```

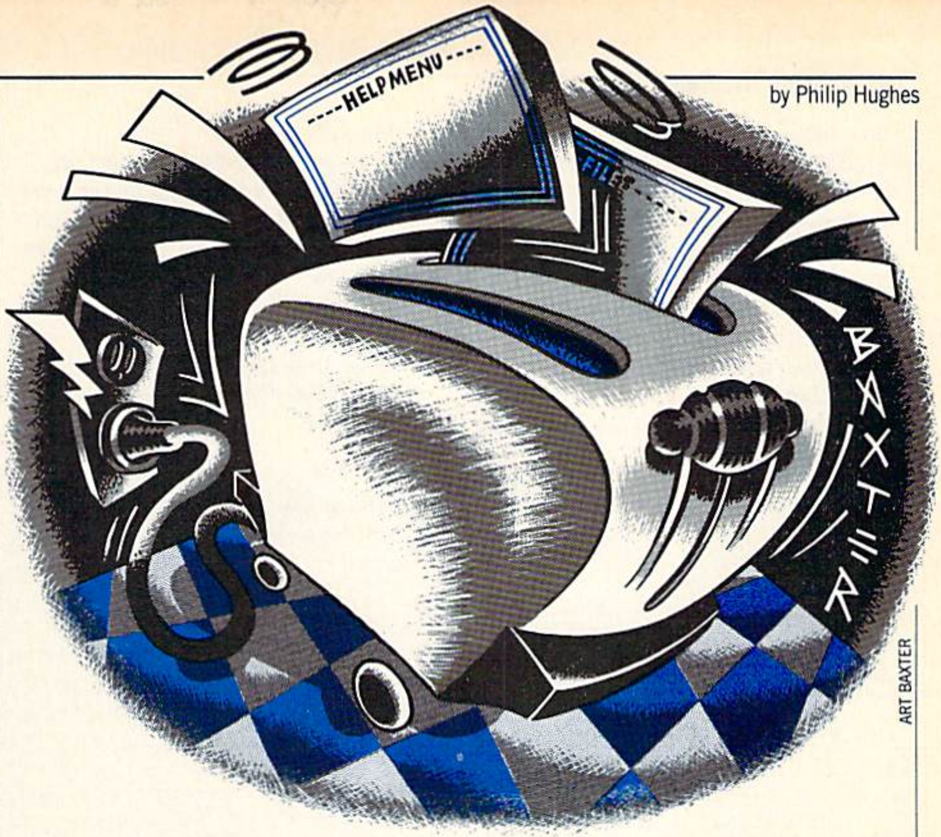
```
7920 PRINT "[HOME,DOWN,RIGHT,CMDR A,
     SHFT *7,CMDR S,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,CMDR Z,SHFT *,
     CMDR X,UP,LEFT,SHFT -,UP,LEFT,
     CMDR A,SHFT *3,CMDR S,DOWN,LEFT,
     SHFT -,DOWN,LEFT,CMDR Z,SHFT *,
     CMDR S,DOWN,LEFT,SHFT -,DOWN,
     LEFT,CMDR Z,SHFT *2,CMDR S,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -]";
     'BBYT
7930 PRINT"[DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,CMDR X,HOME,DOWN2,
     RIGHT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT]";'BBYQ
7940 PRINT "[CMDR Z,SHFT *4,CMDR S,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     CMDR X,LEFT2,SHFT *,LEFT2,SHFT *,
     LEFT2,CMDR A,DOWN,LEFT,SHFT -,
     DOWN,LEFT,CMDR X,LEFT2,SHFT *,
     LEFT2,SHFT *,LEFT2,CMDR A,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     CMDR Z,SHFT *5,CMDR X]";'BBAU
7950 PRINT "[UP,LEFT,SHFT -,UP,LEFT,
     CMDR A,SHFT *,CMDR S,DOWN,LEFT,
     SHFT -,DOWN,LEFT,CMDR Z,SHFT *,
     SHFT +,SHFT *5,CMDR X]";'BBKD
7955 PRINT "[UP,LEFT,SHFT -,UP,LEFT,
     SHFT -,UP,LEFT,SHFT -,UP,LEFT,
     CMDR S,LEFT2,SHFT *,LEFT2,CMDR Z,
     UP,LEFT,SHFT -,UP,LEFT,CMDR S,
     LEFT2,SHFT *,LEFT2,SHFT *,LEFT2,
     SHFT *,LEFT2,CMDR A,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -]"'BAPU
7960 PRINT "[HOME,DOWN16,RIGHT10,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,SHFT -,DOWN,LEFT,SHFT -,
     DOWN,LEFT,SHFT -,DOWN,LEFT,
     SHFT -,DOWN,LEFT,SHFT -,DOWN,
     LEFT,CMDR Z,SHFT *9]"'BAWK
7970 PRINT "[HOME,DOWN3,RIGHT4,CMDR A,
     SHFT *,CMDR S,DOWN,LEFT,SHFT -,
     DOWN,LEFT,CMDR X,LEFT2,SHFT *,
     LEFT2,CMDR Z,UP,LEFT,SHFT -]
     "'BAXC
7980 RETURN'BAQQ
10000 DATA 0,0,0,0,0,0,0,0,0,24,0,0,
      60,0,0'BGNW
10005 DATA 126,0,0,126,0,0,60,0,0,24,
      0,0,0,0,0,0'BMJD
10010 DATA 0,0,0,0,0,0,0,0,0,0,0,0,24,
      0,0,60,0,0,24,0,0,0,0,0,0,0,0,0,
      0,0,0'BODE
10020 DATA 0,0,0,0,0,0,0,0,0,0,0,0,24,
      0,0,60,0,0,24,0,0,0,0,0,0,0,0,0,
      0,0,0'BODF
10030 DATA 0,0,0,0,0,0,0,0,0,0,0,0,24,
      0,0,60,0,0,24,0,0,0,0,0,0,0,0,0,
      0,0,0'BODA
10040 DATA 0,0,0,0,0,0,0,0,0,0,0,0,24,
      0,0,60,0,0,24,0,0,0,0,0,0,0,0,0,
      0,0,0'BODB
10050 DATA 0,0,0,0,0,0,0,0,2,0,0,2,0,
      0,2,0,0,2,0,0,2,0,0,0,0,0,0,0,0,
      0,0'BLHB
10060 DATA 0,0,0,128,0,0,128,0,1,0,0,
      1,0,0'BGED
10065 DATA 2,0,0,2,0,0,0,0,0,0,0,0,0,
      0,0,0,0'BISC
10070 DATA 32,0,0,64,0,0,128,0,1,0,0,
      2'BCGD
10075 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0,0,0,0,0'BMRE
10080 DATA 0,0,0,48,0,0,192,0,3,0,0,0,
      0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0,0'BOMF
10090 DATA 60,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0'BMBF
10100 DATA 0,0,0,12,0,0,3,0,0,0,192,0,
      0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0,0'BODE
10110 DATA 0,0,0,4,0,0,2,0,0,1,0,0,0,
      128,0,0,64,0,0,0,0,0,0,0,0,0,
      0,0,0,0'BONF
10120 DATA 0,0,0,1,0,0,1,0,0,0,128,0,
      0'BCLY
10125 DATA 128,0,0,64,0,0,64,0,0,0,0,
      0,0,0,0,0,0,0'BOXA
10130 DATA 0,0,0,0,0,0,0,0,0,0,64,0,0,
      64,0,0'BINB
10135 DATA 64,0,0,64,0,0,64,0,0,0,0,0,
      0,0,0'BHEA
10140 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,
      64,0,0,64,0,0'BOID
10145 DATA 128,0,0,128,0,1,0,0,1,0,0,
      0'BCBA
10150 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0,0,0,0,0'BMRE
10155 DATA 64,0,0,128,0,1,0,0,2,0,0,
      4'BBHB
10160 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0,0,0,0,0,0,0,0,192,0,3,0,0,
      12,0,0,0'BODE
10170 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,60'BMBE
10180 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0,0,0,0,0,0,3,0,0,0,192,0,0,
      48,0,0,0'BOMG
10190 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0,0,0,0,0,0,1'BQCC
10195 DATA 0,0,0,128,0,0,64,0,0,
      32'BXAE
10200 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,2'BENX
10205 DATA 0,0,2,0,0,1,0,0,1,0,0,0,
      128,0,0,128'BKPE
```

END

by Philip Hughes

# Wiz-Bang 128

## *for the Commodore 128*



ART BAXTER

Wiz-Bang 128 is a pop-down menu word processor for the Commodore 128. It was designed as a quick alternative to loading a large word processor into memory to write a short letter. It was written entirely in BASIC and offers full-screen editing. Many of the powerful features of BASIC 7.0 were used to make it quick and easily compiled.

I have found that there are many people who needed a word processor to write to drive 11 or 12, and this program will do that. While it is not a full-featured word processor, Wiz-Bang has about 30 features. It has full-screen editing and is capable of centering lines of text.

To chose a pop-down menu, move the highlighted menu using the right cursor key. After highlighting the appropriate menu press RETURN. A new window will open with new options. If you wish to exit a particular window press RETURN again to return to the main menu.

To create a document press RETURN immediately upon loading the program. The cursor will move down to the editing position to allow you to enter text. All editing keys will work as they normally do in this mode. When you are finished writing your text, press the left arrow key at the top left side of your keyboard. You will then exit the editing mode.

### Files

Choose the Files window to store your document on disk. This function allows you to read and write your text files to the disk. It will also let you name or change the name of your document. Simply chose the highlighted first letter in the new menu for each function you wish to use. (e.g., to load a document press L).

### Disk Functions

Certain disk functions are selected under the Disk heading. Here you have the options of RENAMING, SCRATCHING or DIRECTORY. Select each function by pressing the first letter of your choice. (These functions will only work on device number eight.)

### Printing

The printer function is selected in the same manner as the previous functions. You have the option of printing to the screen or the printer. The device for the printer may be either 4 or 5. Another aspect to keep in mind is the way the printer routine works. The printer automatically reformats your text if you change your right margin after typing in your text. You can change your margins after typing in your text if you want. However, the margins will only change when it prints your document. Select your margins before you go to the editing mode to type your document. Because of this feature the printing routine is a little slow.

To speed things up the word processor can easily be compiled. This program will allow a form of underlining by using a graphics character. This will work on all the printers that support Commodore graphics characters.

### Margins

Under the margins options, you may change left, right, top or bottom margins. To change the margins reply by pressing the "Y" key, and the program will allow you to change the numbers.

### Status

If you select the status feature, the program will display some basic statistics about your document. It will tell you the number of words in your document, the name of the document and the lines of text you currently have in memory. Since the object of writing this program was to see how many features I could pack into the smallest amount of space, the number of words feature will only work for documents that you are currently writing. It will not show the number of words for documents loaded from a previous session. I hope this will be only a minor inconvenience.

### Help

The help option is a simple screen to help you remember the few commands it takes to use this program.

### Options

Now we are getting back to the serious side of things. The options selection allows you to change drive number, type of file, spacing and printer number. If you'd like to change any of the aforementioned, press the "Y" key, and Wiz-Bang will allow you to change any of the information. If you press RETURN, the information will remain unchanged. This also holds true for the Margins window.

### Editing Options

Under the editing mode you can edit your document, clear the text or use the special feature for doing form letters. To do form letters, press the letter "F," and the form letters screen will pop up in front of you. To use this option you must have already prepared a form document and have it in text memory, otherwise you will receive a DOCUMENT NOT PRESENT warning.

To prepare your document, look at the

Form Letter window. As you can see, there are seven lines of information that you can fill in. Each line corresponds to a number—one through seven. To fill in your form letter, place an asterisk followed by a number within your text. For example, (*01) would place the name in that location on your document. Using this technique you could place any of the information typed in on the Forms Letter screen any place in the document as often as you want.

The prepared document is stored in memory, so you can send out one or several form letters without having to reload your document each time. Look at the example below:

*01 [Name]
*02 [Address line 1]
*03 [Address Line 2]
*04, *05 *06 [City, State Zip]
*07 [Other]

I hope you get the idea. This will be a very useful program to use for occasional form letters.

By the way, centering can be done by placing an up arrow in front of the line you wish to center.

That's all you need to know to use Wiz-Bang. If you like Wiz-Bang 128, stay in touch (in care of *Commodore Magazine*). There will probably be some enhancements to the program in the future.

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30008, Shreveport, LA 71130-0007, 1-800-831-2694.

### Wiz-Bang

```
10 GOTO 2760'BEMX
20 LA=RM:LB=LM:SL=1:PC=1:T1$="":N=1
   :LL=LA:OPEN 4,PR,7:T$="":T2$=""
   :P$="":LC=1'MACS
30 IF PR=3 THEN PRINT SPC(18)
   "----------------<<[CYAN,SHFT P,
   SHFT A,SHFT G,SHFT E,WHITE]>>";PC;
   "----------------"'FKFO
40 FOR X=1 TO TM:PRINT#4:NEXT X:LC=TM
   :CLOSE 4,4'HROI
50 IF A$(N)=""THEN 200'DIVE
60 T2$=A$(N)'BIUE
70 IF A$(N)=""AND T2$=""THEN 200'FLHI
80 FOR A=1 TO LL-LEN(P$)
   :IF T2$=""THEN 220'IPLM
90 X$=LEFT$(T2$,1):T2$=RIGHT$(T2$,
   LEN(T2$)-1):IF X$="[UP ARROW]
   "THEN 130'JGAR
100 IF X$=CK$OR X$=CHR$(95)THEN FL=1
    :GOTO 200'ISNE
110 P$=P$+X$:IF LEN(T2$)=0 THEN N=N+1
    :GOTO 50'JTDG
120 NEXT A:GOTO 180'CFFY
130 FOR A=1 TO LA:X$=LEFT$(T2$,1)
    :T2$=RIGHT$(T2$,LEN(T2$)-1)
    :IF LEN(T2$)=0 THEN N=N+1
    :T2$=A$(N)'QYBT
140 IF A$(N)=""AND LEN(T2$)=0 THEN
    P$=P$+X$:GOTO 200'JVAJ
150 IF X$=CHR$(95)OR X$=CK$THEN
    170'GOOH
160 P$=P$+X$:NEXT A'DINE
170 IN=(80-LEN(P$))/2:GOTO 250'FPJI
180 FOR A=1 TO LEN(P$):IF RIGHT$(P$,
    1)=CHR$(32)OR RIGHT$(P$,
    1)=CHR$(160)THEN 200'NGDR
190 T1$=RIGHT$(P$,1)+T1$
    :P$=LEFT$(P$,LEN(P$)-1)
    :NEXT A'ICTP
200 IF LEFT$(P$,1)=CHR$(95)OR
    LEFT$(P$,1)=CK$THEN P$=RIGHT$(P$,
    LEN(P$)-1)'MGYK
210 IN=(80-LL)/2'DJKB
220 IF FL=1 THEN OPEN 4,PR,7'EJUC
230 IF FL=1 THEN PRINT#4,
    CHR$(17)SPC(IN)P$:IF PR=3 THEN
    PRINT"[UP2]"'KSSK
240 IF FL=1 THEN CLOSE 4:LC=LC+1
    :SL=SL+1:P$="":FL=0:P$=T1$:T1$=""
    :GOTO 270'NMIR
250 OPEN 4,PR,7:PRINT#4,
    CHR$(17)SPC(IN)P$:IF PR=3 THEN
    PRINT"[UP2]"'IWNM
260 CLOSE 4,4:LC=LC+1'DJZG
270 P$="":N=N+1:IF RIGHT$(T2$,
    1)<>" "AND LEFT$(A$(N),
    1)<>" "THEN T2$=T2$+" "'OEXT
280 IF LEN(T1$)+LEN(T2$)>140 THEN
    PS$=T1$+T2$:N=N-1:GOTO 300'LFER
290 PS$=T1$+T2$+A$(N)'DOKK
300 T1$="":T2$="":IF SD$="D"THEN OPEN
    4,PR:PRINT#4:CLOSE 4:LC=LC+1'KASJ
310 IF LC=66-BM THEN 360'EJCC
320 IF X$=CHR$(95)THEN LL=LA'FKNE
330 IF A$(N)=""AND N>LN THEN OPEN 4,PR
    :FOR X=LC TO 65:PRINT#4,:NEXT X
    :CLOSE 4:PRINT NS$:RETURN'OFGP
340 IF LEFT$(PS$,1)=" "THEN
    PS$=RIGHT$(PS$,LEN(PS$)-1)'IWAL
350 T2$=PS$:GOTO 70'CJBF
360 OPEN 4,PR:FOR M=1 TO BM:PRINT#4
    :NEXT M'GNFJ
370 IF PR=3 THEN PRINT
    SPC(18)"----------------<<[CYAN,
    SHFT P,SHFT A,SHFT G,SHFT E,WHITE]
    >>";PC;"----------------"'FKFT
380 PC=PC+1:IF PR=3 THEN PRINT
    SPC(18)"----------------<<[CYAN,
    SHFT P,SHFT A,SHFT G,SHFT E,WHITE]
    >>";PC;"----------------"'HQLX
390 FOR M=1 TO TM:IF M=3 THEN PRINT#4,
    CHR$(17)SPC(70)"PAGE"PC
    :GOTO 410'KWCS
400 PRINT#4'BBDX
410 NEXT M:LC=TM:CLOSE 4:GOTO 340'EMHE
420 REM---------EDITING ROUTINE'BWHG
430 WINDOW 0,0,79,4:ZN=80:DP=3
    :PRINT CH$;:GOSUB 980'FCPK
440 PRINT"[GRAY1]";:    GOTO 1040'CGSE
450 WINDOW 0,5,79,23,1 :PRINT CH$+NS$;
    :PRINT"[CYAN]";   :GOSUB 610'FBGM
460 GET C$:IF C$="" THEN 460'EINI
470 IF C$="[BACK ARROW]" THEN X=0
    :SYS 52684,16,10:PRINT"[GRAY1]"
    : GOTO 1040'HWQO
480 FOR X=1 TO LEN(CS$)'EHUK
490 IF C$=MID$(CS$,X,1) THEN XX=X:X=0
```

```
    :GOTO 520'HVLQ
500 NEXT X'BBRY
510 XX=0'BDUB
520 ON XX GOTO 620,660,690,720,760,
    810,910'CEOI
530 IF POS(X)+1>LEN(A$(H))THEN GOTO
    550'HOJJ
540 IF POS(X)=<LEN(A$(H)) THEN GOTO
    840'HNWK
550 IF C$=S2$THEN C$=S1$'EKFI
560 A$(H)=A$(H)+C$:PRINT C$;:LP=LP+1
    :IF LEN(A$(H))>RM AND C$=S1$THEN
    870'LPQV
570 IF C$=QT$THEN POKE 244,0'EKKK
580 IF C$=S1$THEN WP=POS(X)
    :WO=WO+1'HQRP
590 GOTO 460'BDJJ
600 REM-------------PRINTSCREEN'BXWF
610 H=1:FOR H=1 TO 19:PRINT A$(H)
    :NEXT H:PRINT CO$;:PRINT"[HOME]";
    :H=1: RETURN'KBGN
620 IF H=LN+1 THEN 460'EHIG
630 IF VD=BS AND H<LN+1 THEN H=H+1
    :PRINT CD$+A$(H)+PC$;
    : GOTO 460'MDJR
640 PRINT C$;:IF H<LN+1 THEN H=H+1
    :VD=VD+1'JRVO
650 LP=LEN(A$(H))+1:GOTO 460'EOBK
660 IF VD=TS AND H>1 THEN H=H-1
    :PRINT CU$+A$(H)+PC$;
    :GOTO 460'LBAT
670 PRINT C$;:IF H>1 THEN H=H-1
    :VD=VD-1'IPJP
680 LP=LEN(A$(H))+1:GOTO 460'EOBN
690 IF POS(X)=0 THEN 460'EHQN
700 PRINT C$;:LP=LP-1'DJIF
710 GOTO 460'BDJD
720 IF POS(P)+1 >LEN(A$(H)) AND VD<BS
    THEN PRINT CR$; :H=H+1:VD=VD+1
    :GOTO 460'OIVT
730 IF POS(P)+1 >LEN(A$(H)) AND VD=BS
    THEN 460'ISIN
740 PRINT C$;:LP=LP+1'DJHJ
750 GOTO 460'BDJH
760 LC=POS(X):IF POS(X)=0 THEN
    460'GNLN
770 IF LC>LEN(A$(H)) THEN 790'EMKN
780 A$(H)=LEFT$(A$(H),LC-1)+RIGHT$(A$
    (H),LEN(A$(H))-LC):LP=LP-1'JOBX
790 PRINT C$;'BDIL
800 GOTO 460'BDJD
810 LC=POS(X):A$(H)=LEFT$(A$(H),
    LC)+" "+RIGHT$(A$(H),
    LEN(A$(H))-LC)'JNXR
820 PRINT C$;:PRINT CHR$(27)"O";'DJAI
830 GOTO 460'BDJG
840 LC=POS(X):A$(H)=LEFT$(A$(H),
    LC-1+1)+C$+RIGHT$(A$(H),
    LEN(A$(H))-LC-1)'MSKX
850 PRINT C$;'BDII
860 GOTO 460'BDJJ
870 CP=POS(X):FOR X=WP TO CP
    :PRINT DE$;:NEXT X:PRINT CR$;'IXXT
880 XT$=RIGHT$(A$(H),CP-WP)
    :A$(H)=LEFT$(A$(H),
    LEN(A$(H))-LEN(XT$))'IQUY
890 IF VD=BS THEN PRINT CD$;:LN=LN+1
    :H=H+1:A$(H)=XT$:XT$=""
    :PRINT A$(H);:GOTO 460'MRTD
900 LN=LN+1:H=H+1:VD=VD+1: A$(H)=XT$
    :XT$="":PRINT A$(H);:GOTO 460'KOQS
910 RS$=RIGHT$(A$(H),1)'CMOH
920 IF C$=CR$AND RS$=CK$THEN PRINT
    CR$;:H=H+1: VD=VD+1:LP=1
    :GOTO 960'MIRU
930 IF C$=CR$AND RS$<>CK$AND VD=BS
    AND H<LN-1 THEN PRINT CR$;:H=H+1
    :VD=VD+1:LP=1:GOTO 960'SQJD
940 IF H<LN THEN PRINT CK$ CR$;
    :A$(H)=A$(H)+CK$:H=H+1 :VD=VD+1
    :LP=1:GOTO 460'MRCY
950 IF C$=CR$THEN PRINT CK$CR$;
    :A$(H)=A$(H)+CK$:LP=1:H=H+1
    :VD=VD+1:LN=LN+1'NVPC
960 IF VD=BS+1 THEN PRINT CD$;
    :VD=VD-1 :PRINT A$(H);DC$;'IBPU
970 GOTO 460'BDJL
980 REM---------------"BOX"'BPEP
990 PRINT"[HOME]";:'BCHN
1000 PRINT CHR$(179);:FOR X=1 TO ZN-2
     :PRINT"[CMDR O]";:NEXT X
     :PRINT CHR$(177);:PRINT'LYGG
1010 FOR D=1 TO DP:PRINT"[CMDR +]";
     SPC(ZN-2);"[CMDR -]":NEXT D'HNBD
1020 PRINT CHR$(174);:FOR X=1 TO ZN-2
     :PRINT"[CMDR U]";:NEXT X
     :PRINT CHR$(172);'KXPH
1030 RETURN'BAQV
1040 REM------"HIGH LIGHT
     MENU"---'BJLD
1050 WINDOW 2,2,76,3,1:PRINT"[GRAY1]";
     :GOTO 1110'DSPE
1060 GET A$: IF A$="" THEN 1060'EJED
1070 IF A$="[RIGHT]" THEN 1110'DGPD
1080 IF A$="[LEFT]" AND X >1 THEN
     X=X-2:GOTO 1110'IMXJ
1090 IF A$<> CR$THEN 1060'EJWG
1100 PRINT"[WHITE]";:ON X GOTO 1150,
     1150,1150,1150,1150,1150,1150,
     1150'DRPD
1110 PRINT HM$RV$;  ;:X=X+1
     :IF X>S THEN X=1'HROE
1120 FOR I=1 TO S:IF I<>X THEN PRINT
     RF$M$(I)RV$ ;:GOTO 1140'JXFH
1130 PRINT RV$M$(I)MC$;'BMTA
1140 NEXT I:PRINT:GOTO 1060'DHOB
1150 PRINT SPC((76-(LEN(MG$)+LEN(M$(X)
     )))/2)MG$M$(X)'HDSJ
1160 ON X GOTO 1180,1270,1720,1810,
     1870,2150,2200,2320'CPPI
1170 REM-----"ADDITION DISPLAY"'BFBH
1180 REM------------"-EDITING"'BMCG
1190 VD=1:H=1:PRINT"[CYAN]";'DISH
1200 WINDOW 1,5,20,11,1:ZN=20:DP=5
     :GOSUB 980:SO=4'FEWE
1210 PRINT HM$;:PRINT"[DOWN]";
     :PRINT TX$;:PRINT SPC(2)   "--
     [SHFT E]DITING [SHFT M]ODE--"
     : PRINT SPC(SO)"[PURPLE,SHFT E,
     WHITE,SHFT D,SHFT I,SHFT T,
```

```
      SHFT SPACE,SHFT T,SHFT E,SHFT X,
      SHFT T]":PRINT SPC(SO)"[PURPLE,
      SHFT C,WHITE,SHFT L,SHFT R]
      [SHFT SPACE,SHFT T,SHFT E,SHFT X,
      SHFT T]":PRINT SPC(SO)"[PURPLE,
      SHFT F,WHITE,SHFT O,SHFT R,
      SHFT M] [SHFT L,SHFT E,SHFT T2,
      SHFT E,SHFT R]"'LBDM
1220 GET KEY S$:IF S$=CR$ THEN
      1370'FMQD
1230 IF S$="E" THEN PRINT TX$;
      : GOTO 450'FKKD
1240 IF S$="F" THEN 1950'DGMC
1250 IF S$="C" THEN FOR XW=1 TO LN
      :PRINT"[CLEAR,DOWN3] [SHFT C]
      LEARING [SHFT L]INE= "XW
      : A$(XW)="":B$(XW)="":NEXT XW
      :LN=1:PRINT"[SPACE4,SHFT F]
      INISHED!":SLEEP 2: GOTO 450'OOSD
1260 GOTO 1220'BECC
1270 REM:-----LOAD DISK
      -----------------'BFVI
1280 REM----------------FILES'BUOH
1290 WINDOW 11,5,30,11,1:ZN=20:DP=5
      :GOSUB 980:SO=5'FFRO
1300 PRINT HM$;:PRINT"[DOWN]";
      :PRINT TX$;:PRINT SPC(3)  "-----
      [SHFT F,SHFT I,SHFT L,SHFT E,
      SHFT S]-----": PRINT SPC(SO)"
      [PURPLE,SHFT L,WHITE,SHFT O,
      SHFT A,SHFT D,SHFT SPACE,SHFT F,
      SHFT I,SHFT L,SHFT E]"
      :PRINT SPC(SO)"[PURPLE,SHFT S,
      WHITE,SHFT A,SHFT V,SHFT E,
      SHFT SPACE,SHFT F,SHFT I,SHFT L,
      SHFT E]":PRINT SPC(SO)"[PURPLE,
      SHFT N,WHITE,SHFT A,SHFT M,
      SHFT E,SHFT SPACE,SHFT F,SHFT I,
      SHFT L,SHFT E]"'LBJM
1310 GET KEY S$:IF S$=CR$ THEN
      1370'FMQD
1320 IF S$="L" THEN GOSUB 1380
      :GOTO 1370'FLRD
1330 IF S$="S" THEN GOSUB 1550
      :GOTO 1370'FLXE
1340 IF S$="N"THEN GOSUB 1360
      :GOTO 1370'FLRF
1350 GOTO 1310'BECC
1360 WINDOW 0,14,79,18:ZN=80:DP=3
      :PRINT:GOSUB 980:WINDOW 2,16,77,
      16:INPUT"[SHFT F,SHFT I,SHFT L,
      SHFT E,SHFT N,SHFT A,SHFT M,
      SHFT E] MAX=12 [SHFT C,SHFT H,
      SHFT A,SHFT R]:";V$:PRINT
      :WINDOW 0,14,79,18,1
      :V$=LEFT$(V$,12):RETURN'MRAK
1370 PRINT"[GRAY1]";:WINDOW 0,5,79,23,
      1:GOTO 440'DSBJ
1380 GOSUB 1360'BELF
1390 WINDOW 0,14,79,18:ZN=80:DP=3
      :PRINT:GOSUB 980:WINDOW 2,16,77,
      16:'GNNR
1400 PRINT"[CLEAR] [SHFT L,SHFT O,
      SHFT A,SHFT D,SHFT I,SHFT N,
      SHFT G,SHFT SPACE,SHFT F,SHFT I,
      SHFT L,SHFT E,SHFT SPACE,SHFT N,
      SHFT A,SHFT M,SHFT E] :";V$'BDIM
1410 OPEN 15,DR,15'BINA
1420 G$="@:"+V$+","+FT$ +",R"'FHMF
1430 OPEN 2,DR,2,G$'BJKC
1440 IF DS<>0 THEN PRINT"[CLEAR]";DS$
      :GET KEY S$:GOTO 1530'IPLK
1450 INPUT#2,LN,LM,RM,TM,BM:'BRFG
1460 FOR AB=1 TO LN'DFLG
1470 INPUT#2,A$(AB):X$=A$(AB)
      :B$="[SHFT +]"'DUIK
1480 X=INSTR(X$,B$):IF X>0 THEN
      X$=LEFT$(X$,X-1)+QT$+MID$(X$,X+1)
      :GOTO 1480'NKRV
1490 A$(AB)=X$'BICI
1500 IF DS<>0 THEN PRINT"[CLEAR]";DS$
      :GET KEY S$:GOTO 1530'IPLH
1510 IF A$(AB)="" THEN 1530'DKEC
1520 NEXT AB'BCFB
1530 CLOSE 2:CLOSE 15:LL=RM'DJCF
1540 WINDOW 0,14,79,18,1
      :    RETURN'COVG
1550 REM:-----SAVE DISK -------'BUSI
1560 IF V$="" THEN GOSUB 1360'EGFH
1570 WINDOW 0,14,79,18:ZN=80:DP=3
      :PRINT:GOSUB 980:WINDOW 2,16,77,
      16'GMFR
1580 PRINT"[CLEAR] [SHFT S,SHFT A,
      SHFT V,SHFT I,SHFT N,SHFT G,
      SHFT SPACE,SHFT F,SHFT I,SHFT L,
      SHFT E,SHFT SPACE]:";V$'BDMR
1590 G$="@:"+V$+","+FT$ +",W"'FHRN
1600 OPEN 15,DR,15'BINB
1610 OPEN 2,DR,2,G$'BJKC
1620 IF DS<>0 THEN PRINT"[CLEAR]";DS$
      :GET KEY S$:GOTO 1700'IPKK
1630 PRINT#2,LN;CR$,LM;CR$,RM;CR$;TM;
      CR$;BM;CR$'BLML
1640 FOR A=1 TO LN'DEBF
1650 X$=A$(A)'BHLG
1660 X=INSTR(X$,QT$):IF X>0 THEN
      X$=LEFT$(X$,X-1)+"[SHFT +]
      "+MID$(X$,X+1):GOTO 1660'NIEW
1670 PRINT#2,CHR$(34)+X$;CR$'DMRK
1680 IF A$(A)="" AND A=LN THEN
      1700'FMWM
1690 NEXT A'BBTI
1700 CLOSE 2:CLOSE 15'CESC
1710 WINDOW 0,14,79,18,1
      :    RETURN'COVF
1720 REM---------------DISK
      FUNTIONS'BBPI
1730 WINDOW 20,5,41,11,1 :ZN=20:DP=5
      :GOSUB 980:SO=4'FFSN
1740 PRINT HM$;:PRINT"[DOWN]";
      :PRINT TX$;:PRINT SPC(1)"--
      [SHFT D,SHFT I,SHFT S,SHFT K,
      SHFT SPACE,SHFT F,SHFT U,SHFT N,
      SHFT C,SHFT T,SHFT I,SHFT O,
      SHFT N,SHFT S]--":PRINT SPC(SO)"
      [L. BLUE,SHFT D,WHITE,SHFT I,
      SHFT R,SHFT E,SHFT C,SHFT T,
      SHFT O,SHFT R,SHFT Y]"
      :PRINT SPC(SO)" [L. BLUE,SHFT R,
      WHITE,SHFT E,SHFT N,SHFT A,
```

```
      SHFT M,SHFT E] [SHFT F,SHFT I,
      SHFT L,SHFT E]"'JWKS
 1745 PRINT SPC(SO)" [L. BLUE,SHFT S,
      WHITE,SHFT C,SHFT R,SHFT A,
      SHFT T,SHFT C,SHFT H,SHFT SPACE,
      SHFT F,SHFT I,SHFT L,SHFT E]
      "'CDEV
 1750 GET KEY S$:IF S$="D" THEN WINDOW
      46,5,77,22,1:ZN=31:DP=16
      :GOSUB 980:WINDOW 47,6,75,21,1
      :S$="":GOTO 1790'MEDA
 1760 IF S$="R" THEN GOSUB 2400
      :INPUT"[SHFT F,SHFT I,SHFT L,
      SHFT E,SHFT SPACE,SHFT N,SHFT A,
      SHFT M,SHFT E,SHFT SPACE]:";F1$
      :PRINT SPC(35);:INPUT" [SHFT N,
      SHFT E,SHFT W] [SHFT N,SHFT A,
      SHFT M,SHFT E] :";F2$
      :RENAME (F1$) TO (F2$):'KIXI
 1770 IF S$="S" THEN GOSUB 2400
      :INPUT"[SHFT F,SHFT I,SHFT L,
      SHFT E,SHFT SPACE,SHFT N,SHFT A,
      SHFT M,SHFT E,SHFT SPACE]:";F1$
      :SCRATCH (F1$):PRINT"[CLEAR]
      [SHFT F,SHFT I,SHFT L,SHFT E,
      SHFT SPACE,SHFT S,SHFT C,SHFT R,
      SHFT A,SHFT T,SHFT C,SHFT H,
      SHFT E,SHFT D] !:":SLEEP 1
      :WINDOW 0,14,79,18,1'JKHP
 1780 PRINT"[GRAY1]";:WINDOW 0,5,79,23,
      1:GOTO 440'DSBO
 1790 PRINT TX$;"[HOME]---------
      [SHFT D,SHFT I,SHFT R,SHFT E,
      SHFT C,SHFT T,SHFT O,SHFT R,
      SHFT Y]---------"
      : WINDOW 47,7,75,21
      :PRINT SO$'DURB
 1800 DIRECTORY:PRINT"[SHFT P,SHFT R,
      SHFT E,SHFT S2,SHFT SPACE,SHFT A,
      SHFT N,SHFT Y] [SHFT K,SHFT E,
      SHFT Y] !":GET KEY S$ :PRINT NS$
      :GOTO 1780'GNIS
 1810 REM---------------PRINTER'BVPH
 1820 WINDOW 30,5,54,13,1 :ZN=25:DP=7
      :GOSUB 980:SO=7'FFKN
 1830 PRINT HM$;:PRINT"[DOWN]";
      :PRINT TX$; :PRINT
      SPC(2)"-------[SHFT P,SHFT R,
      SHFT I,SHFT N,SHFT T,SHFT E,
      SHFT R]-------":PRINT
      :PRINT SPC(SO)" [YELLOW,SHFT S,
      WHITE,SHFT C,SHFT R,SHFT E2,
      SHFT N] ":PRINT:PRINT SPC(SO)"
      [YELLOW,SHFT P,WHITE,SHFT R,
      SHFT I,SHFT N,SHFT T,SHFT E,
      SHFT R,SPACE2]"'LYUM
 1840 GET KEY S$:IF S$="S" THEN PR=3
      :GOSUB 2410'HNPN
 1850 IF S$="P"THEN PR=4
      :GOSUB 2410'FKSL
 1860 PRINT"[GRAY1]";:WINDOW 0,5,79,23,
      1:GOTO 430'DSAN
 1870 REM---------------MARGINS'BVWN
 1880 WINDOW 38,5,63,13,1 :ZN=25:DP=7
      :GOSUB 980:SO=0 :WINDOW 39,5,62,
      13:PRINT'HSIX
 1890 PRINT HM$;:PRINT"[DOWN]";
      :PRINT TX$;'DLMO
 1900 PRINT"[SPACE3]-----[SHFT M,
      SHFT A,SHFT R,SHFT G,SHFT I,
      SHFT N,SHFT S]-----"
      :  PRINT"[SHFT L,SHFT E,SHFT F,
      SHFT T,SHFT SPACE,SHFT M,SHFT A,
      SHFT R,SHFT G,SHFT I,SHFT N,
      SPACE2,SHFT SPACE]: ##-";LM
      :PRINT SPC(SO)"[SHFT R,SHFT I,
      SHFT G,SHFT H,SHFT T,SHFT SPACE,
      SHFT M,SHFT A,SHFT R,SHFT G,
      SHFT I,SHFT N,SHFT SPACE]
      : ##-";RM:PRINT SPC(SO)"[SHFT T,
      SHFT O,SHFT P,SHFT SPACE,SHFT M,
      SHFT A,SHFT R,SHFT G,SHFT I,
      SHFT N,SPACE4]: ##-";TM'GSXX
 1910 PRINT"[SHFT B,SHFT O,SHFT T2,
      SHFT O,SHFT M,SHFT SPACE,SHFT M,
      SHFT A,SHFT R,SHFT G,SHFT I,
      SHFT N,SHFT SPACE]: ##-";BM
      :PRINT SPC(SO)"[SHFT C,SHFT H,
      SHFT A,SHFT N,SHFT G,SHFT E]
      [PURPLE,SHFT Y,WHITE]/[PURPLE,
      SHFT N,WHITE]?[PURPLE]";'DIOC
 1920 GET KEY S$:IF S$="Y"THEN
      1940'FJFJ
 1930 PRINT"[GRAY1]";: WINDOW 0,5,79,
      23,1:     GOTO 440'DSBL
 1940 T=7:WINDOW 57,T,61,T:INPUT LM
      :T=T+1:WINDOW 57,T,61,T:INPUT RM
      :T=T+1:WINDOW 57,T,61,T:INPUT TM
      :T=T+1:WINDOW 57,T,61,T:INPUT BM
      :GOTO 1930'QASJ
 1950 REM------------FORM LETTER'BVEM
 1960 FOR G=1 TO LN:B$(G)=A$(G)
      :NEXT G'FRKO
 1970 WINDOW 15,8,64,20,1 :ZN=48:DP=11
      :GOSUB 980:SO=1 :WINDOW 15,8,63,
      20:PRINT'HTAX
 1980 PRINT HM$;:PRINT"[DOWN]";
      :PRINT TX$;'DLMO
 1990 PRINT TAB(14) "[CYAN]---[SHFT F,
      SHFT O,SHFT R,SHFT M,SHFT SPACE,
      SHFT L,SHFT E,SHFT T2,SHFT E,
      SHFT R,SHFT S]-----[WHITE]"
      :PRINT SPC(SO) "[SHFT N,SHFT A,
      SHFT M,SHFT E,CMDR @14]:"
      :PRINT SPC(SO)"[SHFT A,SHFT D2,
      SHFT R,SHFT E,SHFT S2,SHFT SPACE,
      SHFT L,SHFT I,SHFT N,SHFT E,
      SHFT SPACE]1 [CMDR @3]:"
      :PRINT SPC(SO)"[SHFT A,SHFT D2,
      SHFT R,SHFT E,SHFT S2,SHFT SPACE,
      SHFT L,SHFT I,SHFT N,SHFT E,
      SHFT SPACE]2[CMDR @4]:"'IPIN
 2000 PRINT SPC(SO)  "[SHFT C,SHFT I,
      SHFT T,SHFT Y,CMDR @14]:"'CDKI
 2010 PRINT SPC(SO)  "[SHFT S,SHFT T,
      SHFT A,SHFT T,SHFT E,CMDR @13]
      :"'CDVJ
 2020 PRINT SPC(SO)  "[SHFT Z,SHFT I,
      SHFT P,CMDR @15]:"'CDBK
 2030 PRINT SPC(SO)  "[SHFT O,SHFT T,
```

```
     SHFT H,SHFT E,SHFT R,CMDR @13]:"
     :PRINT'DECM
2040 PRINT SPC(SO)"[SHFT P,SHFT R,
     SHFT I,SHFT N,SHFT T] [SHFT F,
     SHFT O,SHFT R,SHFT M,SHFT SPACE,
     SHFT L,SHFT E,SHFT T2,SHFT E,
     SHFT R,SPACE2,PURPLE,SHFT Y,
     WHITE]/[PURPLE,SHFT N,WHITE]
     ?"'CDKQ
2050 PRINT SPC(SO)"[*01] [SHFT T]HRU
     [*07] [SHFT E]ACH [SHFT L]INE
     [SHFT R]ESPECTIVELY";'CEXN
2060 GET KEY S$:IF S$="Y"THEN
     2080'FJBF
2070 PRINT"[GRAY1]";: WINDOW 0,5,79,
     23,1:     GOTO 440'DSBH
2080 T=10:FOR G=1 TO 7:WINDOW 35,T,61,
     T:INPUT IP$(G):T=T+1 :NEXT G'JGYO
2090 IF LN<2 THEN   WINDOW 0,14,79,18
     :ZN=80:DP=3:PRINT:GOSUB 980
     :WINDOW 2,16,77,16
     :PRINT"[CLEAR,SHFT D]
     OCUMENT NOT [SHFT P]RESENT!"
     :SLEEP 4:GOTO 2070'MYEE
2100 FOR G=1 TO LN:A$(G)=B$(G):NEXT G
     :WW=1'GVHD
2110 DO UNTIL WW=LN'DEYY
2120 DP=INSTR (A$(WW),"*")
     :IF DP>0 THEN Y$=MID$(A$(WW),
     DP+1,2):Y=VAL(Y$):A$(WW)=LEFT$
     (A$(WW),DP-1)+IP$(Y)+RIGHT$(A$
     (WW),(LEN(A$(WW))-2)-DP)
     :GOTO 2120'UORF
2130 WW=WW+1 :LOOP'DGPC
2140 PR=4:GOSUB 2410:  GOTO 1970'DNTD
2150 REM---------------STATISTICS'BYQG
2160 WINDOW 38,5,62,13,1 :ZN=25:DP=7
     :GOSUB 980:SO=1'FFLL
2170 PRINT HM$;:PRINT"[DOWN2]";
     :PRINT TX$;:PRINT SPC(SO)"-----
     [SHFT S,SHFT T,SHFT A,SHFT T,
     SHFT I,SHFT S,SHFT T,SHFT I,
     SHFT C,SHFT S]-----":PRINT
     :PRINT SPC(SO)"[SHFT L,SHFT I,
     SHFT N,SHFT E,SHFT S,SHFT SPACE,
     SHFT T,SHFT E,SHFT X,SHFT T,
     SPACE3]->";LN:PRINT SPC(SO)"
     [SHFT N,SHFT U,SHFT M,SHFT B,
     SHFT E,SHFT R] [SHFT W,SHFT O,
     SHFT R,SHFT D,SHFT S] ->";WO'KFYT
2180 PRINT SPC(SO)"[SHFT F,SHFT I,
     SHFT L,SHFT E,SHFT SPACE,SHFT N,
     SHFT A,SHFT M,SHFT E]->";V$
     :GET KEY S$'EJVP
2190 PRINT"[GRAY1]";:WINDOW 0,5,79,23,
     1:     GOTO 440'DSBK
2200 REM---------------HELP'BSUA
2210 WINDOW 1 ,5,79,23,1 :ZN=77:DP=17
     :GOSUB 980:SO=3'FFUH
2220 PRINT HM$;:PRINT"[DOWN2]";
     :PRINT TX$;:PRINT SPC(30)"
     [YELLOW]-----[SHFT H,SHFT E,
     SHFT L,SHFT P,SHFT SPACE,SHFT M,
     SHFT E,SHFT N,SHFT U]-----"
     :PRINT'GQDO
2230 PRINT SPC(SO)"[CYAN,SHFT C]
     OMMAND KEYS[SPACE36,SHFT F]ORM
     [SHFT L]ETTER [SHFT E]MBEDDED
     [SPACE5]":PRINT TAB(56)"[SHFT C]
     OMMANDS"'EHWW
2240 PRINT SPC(SO)"[WHITE][[SHFT C]
     URSOR LEFT][SPACE37][[UP ARROW]]
     [SPACE2,SHFT C]ENTER [SHFT L]INE"
     :PRINT'DEPR
2250 PRINT SPC(SO)"[WHITE][[SHFT C]
     URSOR [SHFT R]IGHT][SPACE36][*01]
      [SHFT P]LACES [SHFT L]INE 1"
     :PRINT'DECT
2260 PRINT SPC(SO)"[[SHFT R]ETURN KEY]
      TO [SHFT S]ELECT [SHFT M]ENU!!
     [SPACE21][*02] [SHFT P]LACES
     [SHFT L]INE 2":PRINT'DEFW
2270 PRINT SPC(SO)"[[SHFT H]
     IGHLIGHTED LETTER] [SHFT S]
     ELECTS [SHFT F]UNCTION IN
     [SHFT B]OX![SPACE5][*03] [SHFT T]
     HRU [*07][SPACE3]":PRINT'DEGB
2280 PRINT SPC(SO)"[[BACK ARROW]]
     [SHFT E]XIT [SHFT E]DIT [SHFT M]
     ODE[SPACE32,SHFT E,SHFT C,SHFT T]
     !![SPACE12]":PRINT'DELV
2290 PRINT SPC(SO)"[[SHFT R]ETURN KEY]
      TO [SHFT E]XIT [SHFT M]ENU!!
     [SPACE28]":PRINT'DEUU
2300 GET KEY S$'CCRY
2310 PRINT"[GRAY1]";:WINDOW 0,5,79,23,
     1:     GOTO 440'DSBE
2320 REM---------------OPTIONS'BVXE
2330 WINDOW 38,5,66,15,1 :ZN=29:DP=9
     :GOSUB 980:SO=1: WINDOW 39,5,65,
     15 :PRINT'HSAO
2340 PRINT HM$;:PRINT"[DOWN]";
     :PRINT TX$;:PRINT SPC(SO)"
     [SPACE2]-------[SHFT O,SHFT P,
     SHFT T,SHFT I,SHFT O,SHFT N,
     SHFT S]-------":PRINT
     :PRINT SPC(SO)"[SHFT S,SHFT P,
     SHFT A,SHFT C,SHFT I,SHFT N,
     SHFT G,SPACE9]-> ";SD$
     : PRINT SPC(SO)"[SHFT F,SHFT I,
     SHFT L,SHFT E,SHFT SPACE,SHFT T,
     SHFT Y,SHFT P,SHFT E,SPACE7]-> ";
     FT$'KHSO
2350 PRINT SPC(SO)"[SHFT D,SHFT R,
     SHFT I,SHFT V,SHFT E] [SHFT N,
     SHFT U,SHFT M,SHFT B,SHFT E,
     SHFT R,SHFT SPACE]#[SPACE2]->";DR
     :PRINT SPC(SO)"[SHFT P,SHFT R,
     SHFT I,SHFT N,SHFT T,SHFT E,
     SHFT R] [SHFT N]O.#[SPACE4]->";PR
     :PRINT:PRINT SPC(SO)"[SHFT C,
     SHFT H,SHFT A,SHFT N,SHFT G,
     SHFT E] [GREEN,SHFT Y,WHITE]/
     [GREEN,SHFT N,WHITE]?";'HTDM
2360 GET KEY S$:IF S$="Y" THEN PRINT"
     [GREEN]";: GOTO 2380'HLEK
2370 PRINT"[GRAY1]";:WINDOW 0,5,79,23,
     1:     GOTO 440'DSBK
2380 T=8:WINDOW 57,T,61,T:INPUT SD$
     :T=T+1:WINDOW 57,T,61,T:INPUT FT$
```

```
     :T=T+1:WINDOW 57,T,61,T:INPUT DR
     :T=T+1:WINDOW 57,T,61,T:INPUT PR
     :'PXGH
2390 T=T+1:PRINT TX$:GOTO 2370'EMCL
2400 WINDOW 0,14,79,18:ZN=80:DP=3
     :PRINT:GOSUB 980:WINDOW 2,16,77,
     16:RETURN'HNAL
2410 REM---------------"PRINTING
     ROUTINE"'BOVG
2420 IF PR=4 THEN GOSUB 2400
     :PRINT  "[RVS,SHFT P,SHFT R,
     SHFT I,SHFT N,SHFT T,SHFT I,
     SHFT N,SHFT G]"'FIAL
2430 IF PR=3 THEN WINDOW 0,0,79,23,1
     :PRINT"[RVS,SHFT P,SHFT R,SHFT I,
     SHFT N,SHFT T,SHFT I,SHFT N,
     SHFT G]":WINDOW 0,1,79,23
     :PRINT SO$'HGCS
2440 GOTO 20'BCJC
2450 WINDOW 0,5,79,23,1
     :PRINT CH$+NS$; :PRINT
     SPC(23)"--------------[SHFT H,
     SHFT E,SHFT L,SHFT P] [SHFT M,
     SHFT E,SHFT N,SHFT U]
     ---------------"CR$'FCWX
2460 REM -------LOADER---------------
     ---'BGUK
2470 FOR X=6144 TO 6182'DJGI
2480 READ A'BBYG
2490 CS=CS+A'CFAJ
2500 POKE X,A'BDQA
2510 NEXT X'BBRA
2520 IF CS<>3411 THEN PRINT
     CHR$(7)'GJUG
2530 DATA 72,138,72,152,72,169,2,141,
     40,10,162,18'BOFK
2540 DATA 104,32,27,24,232,104,32,27,
     24,162,31,104'BPIL
2550 DATA 76,27,24,142,0,214,44,0,214,
     16,251,141,1,214,96'BWCN
2560 READ A:IF A=-1 THEN RETURN'GETJ
2570 FOR Y=0 TO 7'DDAI
2580 READ W'BBVH
2590 AD=12288+16*A+Y'ELKN
2600 HI=INT(AD/256):LO=AD-(256*HI)
     'GVYI
2610 SYS DEC("1800"),W,LO,HI'CKWF
2620 NEXT Y'BBSC
2630 GOTO 2560'BEKE
2640 DATA  115 , 255, 128, 143, 136,
      136, 136, 136, 136'BKYL
2650 DATA  113 , 255, 1, 241, 17 ,
      17 , 17 , 17 , 17'BDCK
2660 DATA  110 , 136, 136, 136, 136,
      136, 143, 128, 255'BKTN
2670 DATA  108 , 17, 17, 17, 17, 17 ,
      241, 1, 255'BDGM
2680 DATA  120 , 0, 0, 0, 0, 0, 255,
      0, 255'BXFM
2690 DATA  121 , 255, 0, 255, 0, 0, 0,
      0, 0'BXGN
2700 DATA  118 , 144, 144, 144, 144,
      144, 144, 144, 144'BKSI
2710 DATA  117 , 144, 144, 144, 144,
      144, 144, 144, 144'BKRJ
2720 DATA  118 , 144, 144, 144, 144,
      144, 144, 144, 144'BKSK
2730 DATA  102 ,  136,136,136,136,136,
     136, 136,136'BKTL
2740 DATA 92,17,17,17,17,17,17,17,
     17'BBQK
2750 DATA -1'BCYG
2760 PRINT CHR$(14):PRINT "[CLEAR,
     SHFT O]NE [SHFT M]OMENT [SHFT P]
     LEASE!":GOSUB 2460'EKHS
2770 PRINT"[CLEAR]":PRINT'CBAK
2780 PRINT"[WHITE]" :WINDOW 22,7,57,
     16,1 :ZN=33:DP=8:GOSUB 980'FCNS
2790 PRINT"[CYAN,HOME,DOWN2]"'BAJL
2800 PRINT SPC(5)"[SPACE7,SHFT W]IZ-
     [SHFT B]ANG! "'CCFI
2810 PRINT SPC(1) "[SPACE4,SHFT W]
     RITTEN BY [SHFT P]HILIP [SHFT H]
     UGHES "'CCCN
2820 SLEEP 5:CLR:COLOR 6,1
     :CR$=CHR$(13):PRINT"[GRAY1]";
     :FAST:WINDOW 0,0,79,24'IFWQ
2830 PC=1:LC=1:SO=2:WO=1
     :ET$=CHR$(27)'GXGO
2840 M$="":SD$="S":AR$=" ":'DMJL
2850 POKE 248,160:IL$=CHR$(27)+"I"
     :DL$=ET$+"D":PC$=ET$+"J"'IEDT
2860 DC$="[HOME,DOWN18]":DE$=CHR$(20)
     :DIM IP$(7)'ESKP
2870 DIM A$(300):DIM B$(300):LP=1:LM=5
     :RM=70:CO$=ET$+"F":HM$="[HOME]"
     :CH$="[CLEAR]":CK$=CHR$(186)'LCBD
2880 TM=5:BM=5:FT$="S":TX$="[WHITE]"
     :S1$=CHR$(32):S2$=CHR$(160)
     :QT$=CHR$(34)'KPCB
2890 SP=1:DR=8:PR=4:LL=RM:DW$=ET$+"W"
     :UP$=ET$+"V"'IFCA
2900 CU$=DW$+PC$ :H=1:VD=1:TS=1:BS=19
     :SO$=ET$+"L"'IHPQ
2910 CD$=UP$+DC$:CS$="[DOWN,UP,LEFT,
     RIGHT]"+DE$+CHR$(148)+CR$'HYBP
2920 PRINT"[CLEAR]";:NS$=CHR$(27)+"M"
     :ES$=CHR$(27)+"L" :'HSKO
2930 RF$="[RVOFF]":RV$="[RVS]"
     :MG$="[SHFT Y]OUR [SHFT C]HOICE
     :"'DLMP
2940 S=8:DIM M$(8):SP$="[WHITE] "
     :HL$="[WHITE]":MC$="[PURPLE]"
     :CB$="[LEFT9]"'GYPW
2950 M$(1)="[GRAY3,SPACE2,SHFT E]DIT
     [SPACE3]":M$(2)="[ORANGE,SPACE2,
     SHFT F]ILES[SPACE2]"
     :M$(3)="[L. BLUE,SPACE3,SHFT D]
     ISK[SPACE2]":M$(4)="[YELLOW]
     [SHFT P]RINTER "'EXFC
2960 M$(5)="[PURPLE] [SHFT M]ARGINS "
     :M$(6)="[L. GREEN,SPACE2,SHFT S]
     TATUS " :M$(7)="[RED] [SHFT H]
     ELP[SPACE3]":M$(8)="[GREEN]
     [SHFT O]PTIONS "'EXND
2970 GOTO 430'BDGL
2980 SCRATCH"WIZ-BANG":DSAVE"WIZ-BANG
     "'CBSR
2990 SCRATCH"WIZ-BANG.BK"
     :DSAVE"WIZ-BANG.BK"'CBLU
```

END

*Continued from page 60*

The Amiga can only anti-alias on a pixel-by-pixel basis. Character generators with better horizontal resolution can do "sub-pixel" anti-aliasing. This translates into cleaner edges on characters. Additionally, some high-end character-generators use linear keying linked to their anti-aliasing controls to vary the opacity of the character at the transition edge between it and the live video background to increase the apparent anti-aliasing.

Another issue is the creation of "illegal colors." The NTSC standard sets the maximum and minimum levels allowable for a composite video signal. A pure white should have an IRE level of 100, and a pure black should be at IRE 7.5. It is possible to have a signal that has an IRE of 100 and still add color to that signal. This would be an illegal color. It is possible to generate illegal colors on high-end character generators, but they will warn you that you are using an illegal color. On the Amiga this should be controlled by the genlock/encoder you use. Adequate testing with a waveform monitor should let you know if your setup will generate illegal colors.

## Amiga Software for Character Generation

There is a tremendous amount of software available for the Amiga that can be used for character generation, some of it designed specifically for that purpose, some of it more generic in nature.

Basic text screens can be created with any paint program. *DeluxePaint II, Express Paint 2, Digi-Paint* or *Photon Paint* all have text capabilities that allow the use of multiple fonts. Once you've created your text screens, you can use a slide show program to display them.

More sophisticated displays can be created via programs like *DeluxeVideo* or *DeluxeProductions.* Three-dimensional creation and rendering programs such as *VideoScape 3-D* and *Sculpt/Animate 3-D* can also be used to create titling effects.

For the best results you may want to use applications designed specifically for titling and character generation. *TV*TEXT/SHOW, VideoTitler* and *Pro Video CGI* all fall into this category.

*TV*TEXT* and *TV*SHOW* are a tag team pair of programs from Brown-Wagh Publishing. *TV*TEXT* is used to design screens of text using standard Amiga fonts. Any number of fonts can be used on each screen, and text can be rendered with any attribute including italics, bold, underline, outline, drop shadow, edge, extrude and strobe. Rendered text can be grabbed and then stretched, squeezed and rotated. Letter spacing can be adjusted for each line of text. Text can be left or right justified or centered.

You can also grab any section of the screen and use it to create either a tile or wallpaper pattern background. IFF images can be brought in as background images as well. Simple drawing tools let you create lines, boxes, circles and ellipses. The program is very simple to use, and only occasional references to the manual are required.

*TV*SHOW* is used to present the screens created with *TV*TEXT.* It offers over 40 transition effects including reveals, pushes, cuts, splits, spirals, fades and pulls. Brushes can be also added to screens, and these can be brought in from off screen and/or flown off screen. Complete control over timing, transition and color cycling is simple to set up. This combination package is very Amiga-like and intuitive.

*VideoTitler* from Aegis is another Amiga-styled titler with presentation software. It has several unusual features that make using it easier. You can load up to ten fonts into memory and assign function keys to call them. You can also use "Polytext" fonts; these are created from polygons. Polyfonts can be sized without distortion, and can be filled, skewed, distorted, flipped and mirrored. Excellent special display effects can be used on text including 3D block, neon and embossed.

*VideoTitler* provides support for halfbrite and ColorText, allows the use of IFF background images and supports the ANIM format. It also includes VideoSEG, a transitions program. VideoSEG includes wipes and fades, dissolves and block effects like diamond, checker, drizzle and burst.

If you are interested in a traditionally-interfaced character generator, you should look at *Pro Video CGI* and/or *Pro Video Plus.* These are designed for strict keyboard-only interfacing, just as Chyron character generators are designed. In some respects (although I am reluctant to give up the use of the mouse and menus), the *Pro Video* approach makes sense in a production environment where those who will be using the Amiga for character generation have a traditional background as *Pro Video* will be immediately familiar.

*Pro Video* offers the fastest transitions of any of the systems mentioned so far, short of loading everything into a RAM disk. This is because it stores everything in memory automatically. All editing is done directly on screen, and every screen is immediately available for examination or re-editing. *Pro Video* offers an excellent variety of transitions, and does not require a separate program for the creation of transitions. It will take you a little longer to learn to use, but it offers speed and sharpness that other programs have yet to match.

A possible contender for *Pro Video*'s honor spot is a new product, *Broadcast Titler* from InnoVision Systems, publishers of *Video Effects 3D.* The program was still in beta test at the time this article was written, but the publishers claim to have broken the 16 color hi-res barrier. They state that you will be able to use up to 300 colors on a single screen. They also have a unique font conversion system that turns standard Amiga fonts into 23 nsec resolution fonts using a proprietary anti-aliasing technique. The program will have a keyboard-only interface and should be available by the time you read this.

You may also want to take a look at *Video Effects 3D.* This is an animation and special effects package with title effects in mind. It lets you take IFF images, specify starting and ending movement points, type of movement, and it automatically renders the required frames to create a smooth animation. Full-screen animation playback is smooth, not jerky as in some other programs.

Available effects include tumbles, turns, spins, flybys, zooms, extrusions, page peels, shrivels and shatters. This program is an excellent choice for title treatments and logo effects.

For an Amiga-based character generation system I would recommend an Amiga 2000, extra memory, a professional-quality encoder/genlock such as the SuperGen or Magni 4004, and a mix of graphics software. A paint program would be essential, as would a good character-generation package. I would add a special effects package such as *Video Effects 3D, 3D Animation Toolkit* from Lange-Miller Computer Graphics (requires *VideoScape),* or the excellent programs by Martin Hash. I would also consider adding one of the image processing programs such as *Butcher* or *PIXmate.*

The entire system would cost less than the $5,000+ you would pay for a Chyron VP-2 and would in most aspects exceed it in capabilities. Of course, you could still do your word processing, keep your books and play *F/A-18 Interceptor* as well. Try that on a dedicated character generator.

*Continued from page 30*

If, like me, you have migrated from one word processor to another as your system has grown and new products were introduced, you probably have a collection of files created with older word processors. *geoWrite Workshop* supports three of the more popular ones (*FleetSystem 4, PaperClip II* and *WordWriter)* directly. Thus you can import files created with them directly into this word processor, and the text will be formatted to match the design of the original—margins, text style, page breaks, etc. This feature makes sharing files between two systems about as painless as it gets. If your program is not on the list, you can still import files using a generic load. Because of this feature, I think a lot of people will continue to use the word processor they are familiar with to input text quickly and then switch to *geoWrite Workshop* to style, format and add graphics before printing them.

The word processor supports any printer compatible with GEOS (and that means nearly any device which ever applied ink to paper), plus the Apple LaserWriter. A special driver called geoLaser allows you to send documents to that printer in the correct format, so it can print them using 300 dots per inch. If you subscribe to the Q-Link network, you can also send your documents to them via modem, and they will print them on a laser printer and return them to you by mail. Regardless which print method you use, *geoWrite Workshop* is coded for quality.

Along side of *geoWrite* on the desktop are several other programs: *geoMerge*, Text Grabber and Paint Drivers. As you would expect, the merge utility lets you produce lists of items which can be merged automatically into documents created with the word processor. If you use *geoDex* or *geoFile* (a database program sold separately) to keep track of people, businesses and addresses, *geoMerge* lets *geoWrite* access those lists and merge them into multiple copies of the same document. But more than just blindly merging data line for line, *geoMerge* allows you to test and alter merged data by using IF, ENDIF and ELSE qualifiers. For example, if you are writing the same cover letter to several customers, you may want to include a specific text if you have spoken with them before or exclude other sections if you have not. Including these labels in a document lets *geoWrite* test for such conditions and substitute different data according to the true/false results of the test. This is a great trick, since it means you can turn mundane form letters into "personalized" communications.

Because of the way the program handles images, you cannot mix text and graphics on the same line (text can appear only above or below pictures). The programmers recognized that arrangement would not always be acceptable to most of us and included an indirect solution through a utility program called Paint Drivers. Paint Drivers duplicates your word processor document as a paint file which can be loaded into and edited by *geoPaint*. The advantage of this solution will be appreciated by anyone who has been frustrated by not being able to adjust the spacing of a line of text or who would like to overlay a graphic with text. Using *geoPaint's* cut and paste tools, you can do just that with any document created with *geoWrite Workshop 128* and converted with Paint Drivers. In fact, the three programs combined could be used as a very flexible desktop publishing package.

If you are a GEOS 128 user in need of a good word processor, I think you'll like *geoWrite Workshop 128*. It has enough power, features and speed to satisfy the needs of most users, yet it is very easy to understand and handle. ■

*Continued from page 69*

**Toast** *(n)* Any burned-up hardware. [Intra]

**Tricked out** *(adj)* Software which has had many features added over its original design to enhance its marketability (attributed to Jim Steinert). [Micro]

**Trivial Bug** *(n)* There shouldn't be a hyphen in "Dimly-lit." [Info]

**TRON** *(adj)* [as in TRON application, TRON desk accessory, TRON printer driver] A GEOS application, desk accessory or printer driver whose sole purpose in life is supreme nastiness; used by BSW in alpha-test procedures to ensure that products are as bullet-proof as possible. The TRON desk accessory, for example, will trash global variables, muck with sprites, erase the screens and otherwise attempt to kill the calling application (it does, however, operate within the standard GEOS conventions—it just pushes them to the limits). [BSW]

**Turing tar-pit** *(n)* The low-end machine's equivalent of entropy. The point where a program becomes so complex that every operation takes slightly less than an eternity to complete. A feared reality when dealing with limited memory and processing speed (such as on the Commodore 64). [A one-bit Turing machine can emulate even the fastest, most complex computer because the formal manipulation of symbols will be the same at any level. In theory, there is nothing a Cray XM-P can compute that a 64 cannot. It's just that what the Cray can do in three seconds might take a 64 three years.] [BSW]

**Tweak** *(v) (from electronics)*, The last fine adjustment. To fine-tune a program by adding features, recompiling the code and removing small bugs and annoyances. Tweaking occurs only at the end of a project and is used only when the feature modifies no more than 25% of the program. [Av/H]

**Tweak** *(v)* Fine adjustment. [Epyx]

**Tweening** *(n)* Interpolation of animation cells. [Epyx]

**Twiddle** *(n)* Synonym for tilde (~). John Wedgwood, author of *geoFile*, only recently discovered that the symbol is in fact called a tilde and not a **twiddle**. [BSW]

**Twiddle** *(v)* To manipulate or alter the state of, as in "**twiddle** a bit." (See also **Bit-twiddler.**) [BSW]

**Uncle Parser** *(n)* The name Imps have given to the special version of the parser, used in Introductory level games like *Seastalker*. It is extremely user-friendly, and the responses never include multi-syllabic words. [Info]

**Undocumented feature** *(n)* A positive-acting bug. [Intra]

**Undocumented feature** *(n)* A bug. [Epyx]

**User-hostile** *(adj)* Self-explanatory. [Intra]

**Vaporware** *(n)* Software that is advertised heavily, but never appears. [Micro]

**Vector pipeline processing** *(v)* Function-tagging of data objects resulting from data normalization and procedure vectorization. [Epyx]

**Virtual** *(adj)* False, fake. (i.e., **virtual** memory, **virtual** screen.) [Epyx]

**VLIR (Variable Length Indexed Record)** *(n)* A GEOS-specific file type composed of up to 127 records of varying length and an index table. The index table contains pointers to the first disk block of each record. [BSW]

**Wally** *(UK usage) (n)* Name given to person asking questions of a very fundamental nature. (e.g., ***Wally:*** I can't save my data. *Customer Support:* Did you format your disk? ***Wally:*** What's "format"?)

**Weekend** *(n)* The time when you work on your own programs; not necessarily a Saturday or Sunday. [Intra]

**Wimp interface** *(n)* An acronym for Window, Icons, Mouse and Pulldowns. [Epyx]

**Wizard** *(n)* Since much of what Infocom does is steeped in the fantasy genre, many terms from our own and other company's fantasy games have crept into the InfoLingo. For example, it is common to refer to any expert as a "**Wizard.**" Example: "I have to speak to one of the **wizards** about this parser bug." [Info]

**Wodge** (n) This word entered the InfoVocabulary while Douglas Adams and Steve Meretzky were collaborating on *Hitchhiker's Guide to the Galaxy.* After an initial trip to Massachusetts, Douglas did most of his work in England, sending material to Steve via electronic mail. After a long period without any new material, Douglas said, "I worked for three solid days, and I'm sending over a huge **wodge** of stuff." **Wodge** quickly caught on as a term meaning a great deal of work, or more generally, a large amount of anything. [Info]

**"Y" Code** *(n)* Brian Fargo tells me that most of the people at Interplay Productions program in C, but one person does things in a very unusual manner (especially when he's tired). They claim this individual programs in **Y.** [Iplay]

**Zombieware** *(n)* Products that have been previously announced, both publicly and in catalogs, but will not be released due to circumstances beyond the company's control. (Also see **Vaporware.**) [SSI]



## Next Month in Commodore Magazine

***Making it Pay***
How to make money with your Commodore Computer.

***Amiga MIDI Sequencers***
A comparison of the top five sequencers available for the Amiga.

***World of Commodore***
A quick look in words and pictures at the first U.S. World of Commodore Show.

*Available on newsstands February 16, 1989.*

*Continued from page 73*

power CAD package capable of helping you design major projects, *X-CAD Designer* will fit your bill.

With a rewritten manual (that included an index and quick-reference section) *X-CAD Designer* would be complete. To be fair, the program does offer online help which lets you select the command you are having trouble with, and the program will open a window displaying information about that command. I still prefer more information in hardcopy. My biggest complaint is that the current version's (V1.3) DOS requesters are far from as friendly as you would expect to find on an Amiga. Peter Hall of Haitex Resources says they recognize that the program's interface is not as "Amiga" as it should be and have their programmers working on a solution. The next update (V1.4) should include an intuitive Amiga-type interface to address my reservations about the program. If that is true, professional CAD users will be flocking to *X-CAD Designer*. Combine the program's quality, relatively low price (compared with a buying a dedicated CAD system) with the impressive printer output support (plotters, IFF format, LaserJet, Preferences, Hewlett-Packard, color, raster) and it is easy to see why professionals are excited about *X-CAD Designer*.

The program is not copy protected and can be installed on a hard drive. The cover of the box carries a notice which reads "no dongle option," which I assumed meant the previous dongle-required protection scheme had been abandoned, but I was disappointed. Inside was an oversized dongle which must be inserted in port two for the program to operate. The people at Haitex Resources say this protection scheme will be removed with the release of *X-CAD Designer V1.4*.

## *Draw Plus*

I fell in love with this CAD package the first time I touched it. So let me get my one complaint out of the way—*Draw Plus*' screen updates are slow. Each time you size or move a window, each line is redrawn from point to point in sequence. While delays are not noticeable with simple drafts, they become almost unbearable with complex drawings using a hundred or more separate elements. I've talked with the people at Aegis about this complaint and they confirmed the rumor that an update of the program is in the works, and one of the major changes will be a faster redraw routine. [Editors Note: By the time you read this, *Draw 2000* will be on the shelves.] But as far as the quality is concerned, *Draw Plus* is excellent. In fact, almost ever other CAD program supports a save/load format which allows an exchange of *Draw Plus* files, indicating that this Aegis product has been accepted by the competition as something of an industry standard.

Like *IntroCAD*, *Draw Plus* was designed to run on the Amiga, and its friendly command structure is excellent.

> *DynamicCAD* takes all the mystery out of the creation of arcs and handles the task with intuitive logic.

Nearly every feature can be selected directly from the keyboard or with the mouse. This makes issuing commands both intuitive and quick. The program has all the most often-used features a draftsman needs, plus the best dimension tool on any product I've tried. To measure two points and have the dimension automatically recorded and inserted (including directional arrows) on your drawing, all you need do is pick the points with the mouse pointer and click. Text too can be inserted either on a horizontal or vertical line and sized to suit your needs. *Draw Plus* supports both color and multiple layers and can open as many viewing windows (or different drawings) as your system's memory can accommodate. The program can produce images with accuracy as critical as 1/1000 of an inch.

Not only is *Draw Plus* powerful, but it also feels good. What I mean is that the program responded as I expected, so I could concentrate on drawing rather than the program's commands and environment. I'm sure, given enough time, I would feel that way about all of the programs. But I appreciate a program which responds as I would expect it to, rather than forcing me to respond the way it wants me to, and *Draw Plus* does just that. As the saying goes, "time is money" and time spent learning a new program is time which could have been spent working rather than getting ready to work. *Draw Plus* is so easy to master, little time need be wasted learning the program.

The program's well-written manual is complete and comes with examples to make understanding each of the program's features easy. *Draw Plus* is not copy protected and will operate on as little as 512K of memory, but one megabyte is recommended for 640 × 400 resolution displays. The program requires two floppy drives or a hard drive and will work with the AProDraw tablet.

## *DynamicCAD V2.3*

As far as I know, *DynamicCAD* was the very first professional CAD program to reach the Amiga market. Although the program was designed for the Amiga (not ported over from another system), its command structure was heavily influenced by MS-DOS programs (home of the reigning CAD heavyweights in 1986). Thus, its command structure is not as graceful as many dedicated CAD programs which have followed. Although it may not be as friendly to use, it is powerful.

With that said, let me quickly add, to its credit, the program does employ an icon tool bar, which none of the newer programs chose to include. This tool bar is similar to the one used by *DeluxePaint* and most other paint programs. Thus to put the program into special modes (like enter, line, arc, group, edit and measure) you simply click on the icon and the mode is selected.

But most controls are selected by a combination of keystrokes and mouse input. For example, to draw a line you would first press "E" (for enter) and then "L" (for line), or to enter text you would begin with "E" again, but follow that with an "A" for alpha characters. Once in text mode you simply type into the requester space, hit RETURN, and the text is inserted where your cursor is located.

A single command line at the top of the screen prompts you to what commands are currently operative. As you select an option (by pressing a single key) the information on the line changes to trace your command path. Once you memorize the program's commands, mastering the program is as good as done. And until you learn the different commands, you can get on-line help by just pressing the "?" key. Three pull-down windows, which are activated by the mouse, not keystrokes, finish out the command structure.

The program handles some features delightfully well. I particularly like the program's solution to defining arcs (an often-required task, which demands exact, but often difficult to pinpoint placement). *DynamicCAD* takes all the mystery out of their creation and handles the task with intuitive logic. You begin an arc by picking the starting point, then the point where you want the arc to end, and last you pick the radius of the arc. Not only is that logical, but the screen defines the

three key points of the arc by displaying a triangle (which changes sizes as you move the mouse) to show where the arc will start, stop and arch to.

*DynamicCAD* incorporates nearly every feature a CAD user could want including multiple layers, grids, snap to, groups, parts, weighted lines, fill, symbols and text.

The way it handles grids is also worth mentioning. As any architect will tell you, a grid is the working foundation of any drawing, and one of the strengths of all CAD programs is the ability to display and change the size of the working grid as well as force the elements of the drawing to snap to the grid's intersecting points. With most CAD programs you must change the size of the grid in order to have the drawing snap anywhere other than the intersections, but *DynamicCAD* went one better. It allows you to define a grid and then toggle the drawing to snap to different combinations. As an example: If you were drawing using inches as a measurement, you might define your grid to represent .25-inch squares. Then by using *DynamicCAD*'s unique grid toggle, you could have the drawing snap to every .25-inch intersection for one entry and then switch to snap to every other grid (.50-inch points) next. This grid-snap solution is elegant, fast and functional.

One other important feature is how well the program responds to mouse instructions. Any of you who have spent any time with other CAD programs or paint programs will have experienced the frustration of watching an intended straight line develop a kink as soon as you click the mouse on the anchor point. I've learned you can avoid this "kink" problem by rolling the mouse slightly forward before anchoring horizontal lines and a bit to the left before anchoring vertical lines. But with *DynamicCAD* I don't have to remember to oversteer the mouse, the program adjusts beautifully and professionally to every command. I've yet to have a single line kink with the program.

*DynamicCAD* is not copy protected and will operate on as little as 512K of memory. The program comes on three disks and includes sample drawings. The program can easily be installed on a hard drive and will work with the AProDraw tablet. David Boyles, MicroIllusions' Director of Marketing, tells me that no updates of *DynamicCAD* are in the works and plans to market a new program, called *DynamicCAD Electronic Designer*, have been put on hold.

## *PRO-NET V2.0*

*PRO-NET* is a specialty CAD program for designing electronic printed circuit boards. If I were a design engineer I would probably get pretty excited about this product, but since I am far from that status (and have the humble paycheck stubs to prove it), I can simply tell you what the program does, and my impressions of how well it handles those chores. But for any electrical engineers reading, let me add that I did invite Tom Phelps, (a genuine, 9-5 electrical engineer) over to give the program a try, and he left excited. I hardly know the difference between a resistor and a capacitor, but Tom not only knows the difference, he spends every working day designing them, using mainframe CAD. Briefly, he was impressed with the program's logic, power, ease of design, extensive parts library (three disks full), speed and professional tools.

The program has a powerful set of schematic capture commands including grids (as small as .025 inch), rubberbanding, bus bundle, move, copy, parts, label, flip, fill, edit, drag, zoom, dot, circle, box, arc, layers, color, and weight assignment (to ensure important signals get top priority). And, as you would expect, it comes with a healthy collection of electronic parts and schematic templates. You can easily create any part it doesn't have with the CAD program and save to a library disk.

> The intuitive interface makes it simple to learn *PRO-NET* commands without having to memorize a manual

The program's interface is a little different from most Amiga programs, but once mastered it's easy to use and fast. Rather than using icon tools or menus, *PRO-NET* uses the single row of function keys to guide the user through each task. At first we found this interface a little confusing, but once understood its features and structure became second nature. The available options are always displayed in a row of windows at the bottom of the screen which echo the function keys. Thus, as you walk through each command's path, the functions change.

Once the interface is understood, the fastest way to unlock *PRO-NET*'s power is to let your left hand rest on the function keys while your right hand drives the mouse. This lets you quickly key through the options and use the selected tool without either delay or over-exercising the mouse. This intuitive interface makes it simple to learn *PRO-NET* commands without having to memorize a manual (which is fortunate, since the package's single weakness is its lightweight documentation).

One very welcome feature is *PRO-NET*'s ability to automatically assign device numbers parts, so you don't have to manually remember which you have placed on the board. The program will also create an ASCII file (which you can edit or add to manually) which lists all the connections between devices on each diagram.

The program requires a minimum of one megabyte of memory to operate, employs layered designs and will output to any Epson or Hewlett-Packard printer, as well as the more popular plotters. The package's four disks are not copy protected, and *PRO-NET* can be installed on a hard drive.

## AProDraw

Regardless of how comfortable you feel with a mouse as an input device, the feel of that elastic ball never matches the response of a pencil point on paper. To the rescue of those looking for a more traditional input device is R&DL Productions with AProDraw. Although the name might make you think it is a paint or drawing program, it is neither. Instead AProDraw is the name of a package which includes a 12 × 12-inch Summagraphic graphic tablet (an industry standard), stylus, cursor and software driver. Actually, the tablet is 16 × 16 inches in dimension but only the inner 12 × 12-inch square is sensitive to the stylus or cursor.

Here's how it works: First you plug the cable from the tablet into the Amiga's serial port and the power cord into an electric outlet (the tablet does not burden the computer's power supply). Activating the software which controls the board is simple—you just click on an icon, and the board comes to life (the software is not copy protected and can easily be added to your Workbench disk). Once you've done that, both the stylus and cursor (it looks like a mouse with cross hairs) will respond when they are moved. They, in effect, become your mouse, and the tablet mirrors your screen. This does not de-activate your mouse, so you are free to use whichever input device is more appropriate for the task at hand.

At present, the driver will not work with all the CAD packages on the market. The version I use worked well with *X-CAD*, *Draw Plus* and *DynamicCAD*, but

it did not work properly with *IntroCad*. Each time I accessed either disk drive, using *IntroCad*, the tablet simply died, leaving only the mouse activated. The people at R&DL say the next version of the software driver will resolve the remaining software conflicts so AProDraw can be used with any CAD program.

The only real complaint I have with the board is that it ties up the serial port, so unless I invest in a switching box, I can't plug both my modem and AProDraw's board into my system at the same time.

## Which CAD Do You Need?

If anything is certain concerning the software industry, it is that things will change. This is especially true of CAD developers who are not only introducing new products but are also constantly updating and improving current programs. Without knowing your individual drawing needs (and remember—not everyone needs a CAD program), here's the way I judge the current CAD crop:

If you are a builder, working mostly with residential property, *HomeBuilders CAD* will be a great aid to your business. It is simple to use and offers plenty of cost-estimating help. Its drawings and printouts aren't nearly as detailed as true blueprints, but for the builder this CAD is the best bet.

If you aren't sure your needs justify a professional CAD program or your drafting requirements are restricted to single-layer drawings, you can't beat *IntroCAD* for its combination of high power at a low price. Its true Amiga interface makes it so easy to use, I never bothered to read the manual until I began this article.

If you are an electronic engineer, buy *PRO-NET*. Yes, it is expensive, but you should be able to recoup your investment with increased productivity.

If you are a professional draftsman or architect, you have three choices: The most professional (and both difficult to master and expensive) CAD package on the market its *X-CAD Designer*. It has every feature you would expect of a CAD program, plus it is super fast. Its present interface is not what most users would expect from an Amiga program, but once mastered it's powerful and flexible. If you've updated to the Amiga from the MS-DOS world and are familiar with the programs on those systems, you will feel right at home with this one, since its interface closely resembles CAD programs for that system.

What about the other two CAD programs? Without hesitation I pick *Draw Plus* as my CAD program of preference. It has plenty of power, most of the features a professional would require (including the best dimension tool of any I've seen) all packed tightly around a truly friendly (combination keyboard/mouse) Amiga interface. Thus experienced Amiga users should have this one up and running in a matter of minutes. Its single fault is its sluggish redraw function. This one has power, but lacks speed. That problem should be addressed in the promised update.

*DynamicCAD* too has its strong points, but the copy I use (released 2/20/87) still contains a few bugs. With those bugs eliminated, this would be a powerful program any professional would be delighted to use. Those who moved over to the Amiga from the MS-DOS world will especially find this one interesting, since its interface parallels those of MS-DOS-compatible CAD programs too.

Other entries in the CAD arena which promise to be serious contenders are Progressive Peripherals and Software's announced, but yet to be released (or priced) *UltraCAD* and two new ones from Haitex Resources. If *UltraCAD* begins where *IntroCAD* lets off and is reasonably priced, it should keep the competition on their toes while giving professional CAD users another hard choice to make. The two from Haitex (the distributors of *X-CAD Designer*) will be a true 3D CAD program and an entry-level CAD package for occasional users. Neither program names nor release date(s) have been set.

## Do You Need A CAD?

These are specialty programs, designed for drafting, and not everyone needs the power they offer. CAD programs are designed to handle detailed drawing chores—not doodling (even though, technically, they could be used for such tasks). I'm sure most Amiga users could dream up a reason for adding one of these to their software library, but I advise against buying one until you have seen one demonstrated or have tried one yourself. Unless you have a specific need for a CAD program, you might find your investment collecting dust. Just like buying an expensive 18-wheeler to haul a bag of groceries would be a waste of horsepower, using a professional CAD package to turn out simple sketches would be a waste of power. And just as tractor trailers are designed to handle large hauls, but are harder to drive and park than the family car, most CAD programs are perfect for creating detailed and exact drawings, yet are more difficult to master than the more popular paint programs. The bottom line is, if you have a need for a CAD program, there are good ones ready to use today.

Let me end with one warning. While Tom Phelps and I tested and discussed the different CAD programs, I asked him if he thought he could ever return to designing with paper and pencil again. He physically choked at the very suggestion. Returning to a drafting table after mastering a CAD program would be like returning to a manual typewriter after experiencing true word processing. So unless you want to get addicted to a CAD program, don't try the first one—Computer-Aided Design programs will take all the appeal out of approaching a blank sheet of paper with your T-square in hand forever.

## Products Mentioned:

Aegis Development
2210 Wilshire Blvd., Suite 277
Santa Monica, CA 90403
(213) 392-9972
**Draw Plus**
$259.95

EaseWare
25 Belair Road
Wellesley, MA 02181
(617) 237-2148
**HomeBuilders CAD**
$199.95

Haitex Resources
208 Carrollton Park, Suite 1207
Carrollton, TX 75006
(214) 241-8030
**X-CAD Designer**
(Developed by Taurus Software)
$599.95

MicroIllusions
17408 Chatsworth Street
Granada Hills, CA 91344
(818) 360-3715
**DynamicCAD V2.3**
$499.95

Progressive Peripherals & Software
464 Kalamath Street
Denver, CO 80204
(303) 825-4144
**IntroCAD**
$79.95

Prolific Inc.
1808 W. Southgate Avenue
Fullerton, CA 92633
(714) 447-8792
**PRO-NET V2.0**
$475.00

R&DL Productions
11-24 46th Avenue
Long Island, NY 11101
(718) 392-4090
**AProDraw** (12 × 12-inch Summagraphics tablet, stylus and cursor)
$599.00

*Continued from page 77*

ing border to finish the box. The object is to box in at least 75% of the screen to make it to the next level. Unfortunately, it's not that easy because a rapidly-rotating moving shape within the limits of the screen will take away one of your men if it touches you or part of the box you are making during its travels. So, you have to be careful when you leave the relative safety of the borders to make a new box.

Other nasties also patrol the border, forcing you to leave the surface to avoid them. It gets hairy at times, but a lot of thought, strategy and thin boxes that connect to form a bridge across the screen will allow you to finish the level. DigiTek bettered *Qix* by placing a picture behind the screen so that as you box in a part of the screen, the picture underneath is revealed bit by bit. Various objects fly across the screen as well to make play easier or harder. If you touch clocks as they fly, the time allowed to complete a level is increased. Doors take you to the next level instantly. Money bags give points, hearts give extra lives, and tubes give you extra drawing speed. One last change makes *Powerstyx* even more challenging. Letters appear in the screen from time to time. If you surround a letter with a box, it drops into a rectangle at the bottom of the screen. If you get enough letters, they spell the subject of the picture behind the screen and you go to the next level. With all of these features, *Powerstyx* made a dedicated fan out of me.

Finally, *Western Games* completes DigiTek's newest batch of releases. It takes popular sports games to new heights (or depths, some might think) with the following events: Armwrestling, Beershooting, Quid-Spitting, Dancing, Milking and Eating Competition. Each of the events takes place in an Old West setting, with you competing against the same opponent—McSlow, a huge brute of a man. I'll only describe the events that are not self-explanatory. But, be sure that they are all fun, will give your joystick a workout and are hard to master, but easy to play.

Beershooting is target practice with beer glasses, shot glasses and other drink containers. Two trembling lads hold up mugs, etc. that you must shoot before your opponent hits them. If you get all six before McSlow hits any, you win. Quid-Spitting involves chewing a quid of tobacco and trying to get it into a spittoon. A truly disgusting event, but it fits well in the setting. I guess it's the javelin throw of Western Games. Dancing is a silly event in which you must mimic the steps of a showgirl. Milking makes you pull on a cow to try to get the most milk. Finally, Eating Competition is a stew-eating event to try to finish your tureen quickly before the opponent, McSlow. All events are colorfully decorated. The graphics are great and the sound effects rank well.

## Future Plans for DigiTek

The future looks very bright for DigiTek. Two of the games scheduled to be released by the time this article appears are destined to become classics and may bring DigiTek up to the level of such software companies as Cinemaware or Accolade. At the very least, these two games will make everyone at DigiTek more comfortable with their position in the software industry. The games I'm referring to are *The Cyber Complex* and *North Sea Inferno*. At press time, I'd only seen a demo of *North Sea Inferno* and nothing at all of *The Cyber Complex* except a very interesting description of the game.

From the sounds of it, *North Sea Inferno* will be intense.

*The Cyber Complex* takes place in an underground city in the twenty-first century. The city is ruled by a paranoid supercomputer that is afraid that superintelligent people will reprogram it. People in the underground society are measured in intelligence by the color of the shirt that they wear. The people with red shirts are the smartest and a threat to the computer. The computer assigns you to dispose of the "red shirts." You start out with a green shirt which changes colors over the course of the game as you kill more rebels and pick up more knowledge from them. Periodically, the computer tests your intelligence and at one point in the game, you are given red shirt status. Now you must join with the rebels to defeat the computer—a role reversal.

Although I haven't seen this game, it sounds very complex (no pun intended) and a great advance over other products I've seen from DigiTek. *The Cyber Complex* is certainly an innovative and highly unique idea, and I can't wait to see it.

*The North Sea Inferno* is a James Bond-type game in which you must defeat terrorists who have taken over an oil rig, captured hostages and planted a nuclear bomb. After terrorists attacked the rig, some people attempted escape in helicopters. Unfortunately, the vehicles crashed head-on and you are the only survivor. You must make your way back to the rig and infiltrate the structure. You have many weapons at your disposal, and there are many different views and levels to the game. Johnson stated, "It's taken over a year to put together—that almost guarantees good quality. We'll never be able to import *North Sea Inferno* the way it is to the 64." From the sounds of it, *North Sea Inferno* will be intense.

With all this talk about the Amiga and what it can do, you may be wondering what happened to the Commodore 64. Don't fret, because Johnson believes, "Commodore plays a major role in this company with the 64 and the Amiga. The Amiga is a computer that really brings out the best in the programmers as far as entertainment software is concerned, but the 64 still has life too." As proof of this, you can find the following DigiTek titles for the Commodore 64: *Hollywood Poker!, Vampire's Empire, Hole-In-One Miniature Golf, The Cyber Complex* and *Western Games*.

In any case, the Amiga figures prominently in the design work of DigiTek in the future. Johnson said, "The Amiga can do even more than the arcade at this point with music and graphics that you can never find in the arcade. Hook up a stereo system to your Amiga and notice the excellence of the music. As far as games on the Amiga, we haven't even touched one percent of what the machine can do. We really believe that the Amiga should become the computer of the future, and we'd like to help it reach that level. It will certainly be a very big part of the projections of DigiTek into the future."

Johnson sees DigiTek's goals as the following: "To establish DigiTek as one of the major software companies in the United States, to enjoy what we do and have a good time producing, designing and playing games and to release at least 12 titles a year, with six heavily advertised. Those are the goals that we've set for ourselves." DigiTek has already met the latter two goals. Whether DigiTek becomes a major software house is something that's still to be determined. But if what we've seen from DigiTek in the past year is an accurate indicator of what's to come, we may be playing DigiTek games for a long time.

The company has come a long way, and I believe that DigiTek will outlast all of those cheapo, thrown-together companies—let's wait and see.

*I would like to personally thank George Johnson for taking the time to be interviewed and for providing the DigiTek products critiqued in this article.*

## Pumping GEOS/Brian Dougherty

*Continued from page 64*

*Paint* drivers in ways we never anticipated. We basically created them so that you could do two-column output from *Write*. But some people have used the drivers to do color printouts.

**Jordan:** How?

**Dougherty:** Well, *Write* and *Publish* are black and white programs, right? By printing their output to a *geoPaint* file, they could then load the resulting file into *Paint* and color it just like they would any *geoPaint* document. That's a great use.

**Jordan:** One of the biggest complaints I hear about GEOS and its whole family of products is that it's slow.

**Dougherty:** I think it's true if you're running a 64 with a single disk drive. But then, there's nothing else out there that will let you create the kind of pages that you can with GEOS. So at least you can get it done. Our answer to those who are really bothered by performance is to get an REU [RAM Expansion Unit].

**Jordan:** I agree. Using an REU is a truly liberating experience. Well, can you handle one more user complaint? Did you know there's a bug in the 128 version of *Paint*? You cannot always locate your pixel cursor on the pixel you want. It seems to skip over every other pixel at times.

**Dougherty:** I think that's actually the speed of the input driver. If you go in and change the mouse speed—slow it down—you'll be able to do it.

**Jordan:** Is there a version of 2.0 for the 128 out there on the horizon?

**Dougherty:** That is definitely going to happen.

**Jordan:** Can you give me a date on that?

**Dougherty:** *[Laughing]* Well, we don't want to get into vaporware, but it will be sometime soon. We have our beta test copies out right now along with preliminary documentation.

**Jordan:** How about a *geoPublish 128*? Anything happening on that?

**Dougherty:** No, and there probably won't be. We wrestled with this one for a long time. When you think about it, the main reason people want 128 versions of applications is to get the 80-column screen. With *geoWrite* this is really important. But with *Publish* you have the ability in the 40-column mode to work on the entire page.

**Jordan:** Using the Preview mode.

**Dougherty:** Exactly. The only place 80 columns might buy you something is when you zoom in for detail work. There are cases where 80 columns is better for that and cases when it isn't. We saw that an 80-column version of *Publish* was going to be a lot of work, but would it be a lot better?

**Jordan:** Okay, let me switch topics. Is there any way you could get GEOS in ROM, on a cartridge or something, so the user could just turn on his computer and see the deskTop?

**Dougherty:** We are finally at the point where I would agree with you. Before 2.0, I would've said if we put version 1.2 in ROM what would we do when we came out with version 1.3? A piece of software needs to evolve to the point where it makes sense to put it in ROM. But this idea is something to be thought about.

**Jordan:** How would or could you do it? With a lot of people using the REU that sort of takes away the cartridge slot.

**Dougherty:** Not really. It turns out the REU has ROM sockets in it. You could actually open up an REU and stick a ROM in there. So it could be done that way.

**Jordan:** That would be fantastic. Do it. Speaking of the REU, do you happen to know if a person can use the 1764 with a Commodore 128? I've been doing it, but the 1764 manual states expressly that the 1764 is not intended for use with the 128.

**Dougherty:** The only difference between a 1750 and a 1764 is a resistor. I don't think I've ever tried a 1764 on a 128 that it didn't work.

**Jordan:** What about the 1750? They seem to have disappeared from the marketplace, and nobody is saying if or when they'll return.

**Dougherty:** We've been pounding on Commodore to supply more of them. We ran a promotion in *geoNews* to sell the 1750's directly, and we sold all of them. They're still in demand. I think the real story has to do with the DRAM shortage which was caused by government trade legislation. Anyway, Commodore can't get all the RAM it needs to build the Amiga, the 128, and the 64, so it becomes a question of priorities and economics. My feeling is that the incentive just isn't there for the 1750.

**Jordan:** What are some future developments we can look forward to seeing from Berkeley?

**Dougherty:** We plan to come out with significantly enhanced printer drivers. Printers are capable of higher resolutions than you can get with the existing drivers. In fact, I just saw the output from a Star NX-10 that almost looked like Laser Writer output. It came from a guy in Germany who wrote his own printer driver.

Initially, it was a huge undertaking just to develop printer drivers that worked with all the different combinations. Now we're ready to go forward with enhanced drivers.

**Jordan:** You've moved into the Apple market; any chance you'll move into the PC market?

**Dougherty:** A company like ours would have to be crazy not to be looking at the PC market. But we have no announcements to make at this time.

**Jordan:** Do you worry about offending Commodore users with your ventures in Apple-land or maybe eventually IBM?

**Dougherty:** Yes. But we have a much better position in the Commodore world than anywhere else. For example, our Apple version of GEOS competes with one of Apple's own products, Appleworks. But with Commodore we are working *with* the manufacturer. Also, the Apple market is harder to reach. There are only two main magazines devoted to Apple while the Commodore market has three big ones plus several sizable smaller publications.

**Jordan:** Is *geoBASIC* ever going to be incarnated?

**Dougherty:** Oh, yes. And it's got some tremendous capabilities, both for graphics and music.

**Jordan:** How soon?

**Dougherty:** That's a good question. But some day. And it really is a good product.

**Jordan:** Is it more powerful than Abacus' BASIC?

**Dougherty:** Yes, we think so. For example, it has sprite editing and animation capabilities, very sophisticated. And fast. Basically, for animation what you do is to give the sprite its pictures [images], then set the rate of sequencing those pictures and the velocity of movement. It does all this in assembly code every sixtieth of a second.

**Jordan:** It's interrupt-driven.

**Dougherty:** Right. We've had some programmers here do some real neat games in BASIC with smooth, fast animation.

**Jordan:** Speaking of games, any entertainment software in the works from Berkeley?

**Dougherty:** Yes. We have a sea warfare game where you try to take over a whole island. It's kind of like Risk with animation. Also, it's a little like an old Intellivision game called *Sea Battle*.

**Jordan:** Do you ever still get down and hack?

**Dougherty:** Yeah, from time to time.

**Jordan:** Just to stay in touch?

**Dougherty:** Yeah, basically. When you get into the management end of things it's kind of like driving a boat—you don't

have a real direct influence on things. You kind of push people in directions. On the other hand, when you're programming you have 100% control over the product, that little world that you program in.

**Jordan:** How tough was it to start a company from scratch?

**Dougherty:** A lot tougher than when I got into Imagic. *[Dougherty was one of the cofounders of Imagic, a video game company in the early '80's.]* With Imagic, we got two million dollars in venture capital and within six months of selling the first product we had grossed 30 million dollars. I thought making money was the easiest thing in the world.

Then in '83 the video game industry got saturated. Starting Berkeley was a lot different. I talked to some venture capitalists, but they wanted a much larger percentage of the company than before—70%. So I started Berkeley with my own wallet. I did go to some friends also, but it was mainly my own company.

**Jordan:** Do you now feel solid about Berkeley?

**Dougherty:** Yes. We didn't go after the kind of explosive growth that I had experienced at Imagic. It was more controlled, stable.

**Jordan:** How big is Berkeley now? How many engineers do you have working?

**Dougherty:** Eighteen.

**Jordan:** Customer service people?

**Dougherty:** Six and they can't keep up. Fortunately, with Q-Link we have a very effective way to deal with user problems. We really believe in the telecommunications aspects of computing.

**Jordan:** Any chance we'll ever see another of those explosions?

**Dougherty:** Oh, yeah. It'll happen. In fact, we think there's an opportunity that will be developing in the next two years.

**Jordan:** In the eight-bit market?

**Dougherty:** *[Laughing]* I can't say too much. Steve Jobs used to say that a ship leaks from the top.

**Jordan:** Will it be a software or hardware explosion?

**Dougherty:** I can't say too much.

*After talking with Mr. Dougherty I felt quite happy about the immediate future of Commodore eight-bit computers. I've had a chance to play with geoBASIC and GEOS 128 2.0 as well as a brand new application from Berkeley called* geoChart *(see the "Pumping GEOS" sidebar). There is a lot happening at Berkeley and all of it bodes well for us 64 and 128 users.*

*Okay, break's over. Get back in there and start PUMPING GEOS!* ■



*Continued from page 20*

amassed in the depths of the castle.

This change in scenery does wonders to freshen things up for veteran miners. And as the insightful have probably already guessed, with renovated surroundings comes renovated dangers. Those who are used to fending off past underground nemeses like fireflies, butterflies and amoebae will have to develop new strategies to deal with such bizarre enemies as flying toast, tumbleweeds, comets, dancing skeletons and pizzas. There's something for everyone.

To add some colorful background to each environment, a user's manual has been packaged to entertain and inform. Unfortunately for newcomers, although the authors have gone through some trouble to include plenty of imaginative fictional history for each new world, they've forgotten to outline the rudiments of play, like how to dig, move objects and exit. They must have figured that anyone who boots up this contest must have already experienced the other *Boulder Dash* offerings—and it might be wise to take this assumption as an indirect warning. These are tough mazes with some extremely complicated puzzles. Novices would undoubtedly be better off getting some training from the earlier releases before attempting these stiffer challenges. Otherwise, things might tend to get frustrating.

*Rockford: The Arcade Game* successfully carries on the *Boulder Dash* tradition of masterpiece play. Designer Fernando Herrera has once again discovered that perfect blend of brain teaser and reflex test, providing a contest that's as difficult to put down as it is to win. Dig in. ■

## Dig This: How To Have A G'day Down Under

Listen up, seasoned spelunkers: no matter how good you think you are, if you don't watch yourself, this game will bury you alive. It baits player confidence by starting with a couple of intermediate caves, and then suddenly shifts into high gear, letting those with a false sense of security quickly dig their own graves. Be patient, observant and learn from your mistakes—there'll be plenty of them. The user's manual drops a couple of player hints worth looking at, so be sure to check them out. Below, I've added a few tips of my own.

- Every one of your enemies has a certain pattern in which it moves. Experienced players have probably noted and memorized those of the old foes from previous *Dash* environments. In these new neighborhoods the names may have changed, but many of the enemy characteristics remain the same. Once you can be sure of how your opponent will travel, it becomes easier to devise ways to circumvent or eliminate him. Take note: there are more predictable elements at work than first meets the eye.
- In some cave puzzles, you will have to open faucets to let certain liquids flow through the tunnels. In these grottos the paths you dig take on an added importance, since they will be used to direct the liquids to specific areas of the cave. Be careful not to create too many open, useless routes in your travels. If you find that you've inadvertently provided a couple of counterproductive intersections or paths, use your Rockford as a mobile plug to help steer the flow to its planned destination.
- Each cave has a time limit in which your surrogate must excavate and exit, and more often than not this running clock will be your undoing. You'll be heavy in thought, strategically tunneling and collecting your loot when the unwatched seconds suddenly run out. Players will be quick to realize that this game requires swift execution—a skill that can only come from the experience gained through a number of unsuccessful attempts. Have patience to first map out a correct route, and then learn to traverse it at high speed.

What can be very helpful in the planning stage is a couple of Rockford scouting runs. If you're digging along and it becomes obvious that you will not successfully reach your quota in the allotted time, forget treasure-gathering and use the waning seconds for exploration. Move forward and examine upcoming rock formations, enemy positions, treasure groupings and exit locations. You might even want to experiment with the results of certain tunneling maneuvers. Doomed Rockfords might as well invest their time collecting information for future miners.

- Remember, you usually don't have to collect every prize from a cave to unlock the exit door. The programmers have created plenty of time-eating, dangerous treasure clusters that are designed to directly or indirectly do you in. Learn to recognize a trap. You get just as many points for easy pickings, so why take unnecessary chances?

*Continued from page 38*

option sends the program quickly searching through my files for dates which match the parameter I defined and only those are copied. I love this feature.

**The program includes most of the commands you'll need to manage your disk files as well as options to create directories and format disks.**

Another time-saving option for those of us who have a hard time managing a graphic library is the utility's ability to display IFF files (using any resolution including HAM images). With it you can quickly view all your files, organize them according to content, rename any with misleading labels and delete any you no longer need. The power of this option is that it lets you go through scores of images, created with different graphic programs very quickly. This option is simply for viewing files, and there are no printout or editing options included.

For those who want to edit sequential files or perhaps write batch files to execute, the program includes an option to summon up AmigaDOS' own screen editor—ED. Providing the file you select to edit contains no binary code you can view, edit or print it with this option. Because most word processors insert special codes to format text, you will not be able to view or edit them with ED. The document doesn't mention it, but I'm sure you could substitute your favorite editor here by simply moving it to the C directory and renaming it ED.

I did find one bug in my copy of *Ultra DOS Utilities* which I discussed with programmer Mark Brannon. Apparently it got past him because *Ultra DOS Utilities* was developed on a hard disk drive with the needs of hard drive owners in mind. Thus the single bug, to which only users of df0: and df1: are susceptible (single floppy or hard drive users are safe), slipped through development. (Brannon assured me the problem would be fixed on future releases.) Here's how the bug bites and how to avoid it.

Let's assume you began your session with *Ultra DOS Utilities* in df0: but have replaced it with another disk and yet another disk is in df1:. Next you decide to edit a file on the disk now in df0:. When you select this option, the program will prompt you to insert *Ultra DOS Utilities* in "any drive" so it can load ED from the C directory (this requester would never appear if your SYS: drive were a hard disk). So you take out the disk with the file you want to edit and put *Ultra DOS Utilities* in df0:. After it loads and runs ED, the program will prompt you to put the original disk back in "any drive." This is where you can invite the bug to bite. Rather than replacing the disk with the requested file in df0: you pop it into df1:. Everything appears to work fine until you exit ED (without viewing a file) and the requester window which pops up each time you have changed a disk in df0: or df1: tries to open to get your choice of devices. Apparently the program expects to find the disk you took out of df0: still there, but instead it finds it in df1:, becomes confused and locks you out of the system. A single-drive user, or anyone who had installed *Ultra DOS Utilities* on a hard drive (I detected the lock-out before installing it on my drive) would never encounter this unpleasant experience. I avoid the problem simply by installing *Ultra DOS Utilities* on my hard drive.

*Ultra DOS Utilities* comes with a 23-page manual, which includes samples and screen displays to help you master the program. While I would prefer an amplified document, this one serves its purpose, although I suspect novice users will have to play with *Ultra DOS Utilities'* options in addition to reading the manual to master all the power the program supplies. For instance, the program lets you set the size of the programs' copy buffer but doesn't clearly explain why this is important other than to note that 100K to 200K is normally adequate. *Ultra DOS Utilities* even lets you spawn a CLI window if you want to venture out into DOS on your own. While this option has its place (e.g., to run a separate program directly without quitting *Ultra DOS Utilities*, etc.) I suspect new Amiga owners will wonder why the program harbors the very beast they bought the utility to avoid.

The program has lots of power and options which any Amiga users will appreciate. But I especially recommend it to owners of hard disk drives. In my opinion the program is worth owning even if you use it for nothing but protecting the files on your hard drives. When you combine that feature with the program's other powers, it is easy to understand why Free Spirit put the "ultra" in the name. While I'm still not convinced this is *the* "ultra" DOS utility program for the Amiga, it is a powerful tool worth owning. ■



*Continued from page 32*

for the ultimate battle, (which I won't give away).

## Summary

*Rocket Ranger's* disk access speed is three times faster than standard AmigaDOS, which means the graphics and sounds load extremely fast. Since the game is not copy protected, you can install it on a hard disk drive. The manual is very detailed and gives you a complete understanding of the game. You can pause the game at any time by pressing the right mouse button. Otherwise the game is controlled by joystick. A unique feature of the game is called "ReelTalk." Actual digitized voices are used in sync with the character's lips to provide the illusion of actual communication.

*Rocket Ranger* combines many arcade-action sequences along with some amazing speech, sound effects and stunning graphics to make it Cinemaware's best title to date. So, what are you waiting for? Stop reading, strap on your rocket pack, and blast off for your copy while there's still time!

## Hints and Tips

- **Warning!** The following hints should be used only if you are in a tight jam. *Rocket Ranger* can be solved in about one to two hours, so use the clues below wisely.
- Wait to rescue the scientist and his daughter until after the zeppelin has taken them to Germany. This will take you to the dogfight scene where you may employ the following tactics: Just before the planes come out, position yourself in the center of the screen. As you see the first plane, open fire with your ray gun and don't let up. Although you might sustain a hit or two, most of the enemy fighters will be destroyed. When the rest come out, take defensive maneuvers and destroy the rest. If done right, this will work every time.
- When you are fighting a guard in hand-to-hand combat, use the following for a sure knockout: Keep your guard up at all times, and whenever the enemy starts to swing at you use either a left or right head blow. Repeat this procedure until you have knocked him out.
- Whenever you are being interrogated by the Nazis in Germany, you can use the following answers to save the scientist and his beautiful daughter (and yourself). The first response is "Ok, I'll talk," then select "Untie me first." This will allow you to take on the guard in hand-to-hand combat and free the captives if you win. ■

*Continued from page 14*

**Hardball:** When playing the computer in the Champs versus All-Stars game, the ninth player in the Champs lineup, whether it be the pitcher or the second baseman, has the best chance to hit the Inside the Park Home Run. Although it doesn't work every time, it's exciting to try.

When he comes to bat, just pop the fire button to swing down the middle, wait for the good pitch and take a whack at it. If he connects and the ball either gets by the first baseman or third baseman and hugs the line, or if he hits a line drive that also hugs the line, get the batter running to the next base as soon as possible. Stay one step ahead of the runner by pushing the joystick and pressing the fire button in the direction of the next base. If you do it properly, your runner will beat the tag. Don't stop running, since one stop on the base path is doom.
*Victor R. Heredia*
*El Paso, TX*

**Heart of Africa:** If you think you are close to the tomb or if you are badly hurt, go to the nearest village and give the chief a large amount of his favorite commodity and gifts. After a little of this, the chief will make you an honored friend.

He will tell you that you never have to pay for food or canoes there. If you are close enough to it, he will tell you where the tomb is. Usually, he will also heal all your wounds.
*Matt Morrison*
*Soldotna, AR*

**Kikstart:** If you think you won't make a jump, quickly move the joystick up and down, and you will gain altitude like nobody's business. It works, but you have to practice it.
*Omar Salinas*
*Address Unknown*

**Kung Fu:** To finish off the third floor guard, all you have to do is use a low kick on him several times. He'll die real easily.
*Michael Wherry*
*Address Unknown*

**Labyrinth:** I have found a little secret! The game only gives you 13 hours to solve it, but if you don't think that's enough time, use the rule book until time is up. The computer will give you 55 hours and 37 minutes to complete the game.

I also found that if you call Ludo at the Goblin King's Castle he will come. You can call for as many rocks as it takes to throw to knock out the Goblins. If he doesn't come, it is because you probably fell into the Bag of Eternal Stench. If this is the case you must use your perfume.
*Ronald Miller*
*San Antonio, TX*

**The Last Ninja:** If you are having trouble getting the flower in the Palace Gardens, use the Glove which is in the Wilderness.

If you are having trouble getting past the statue that throws knives, get as close as possible to it and start walking past it. When you see it throw the dagger, stop, then continue walking.

If you can't find the hidden passage in the Inner Sanctum, try using the flower to touch the last vase in the room with all the vases in it.
*Brandon Neuschafer*
*Lodi, NJ*

**Legacy of the Ancients:** Viewing the Native Currency exhibit at the back of the Museum can be very lucrative.
*Peter Liang*
*Ann Arbor, MI*

**Legacy of the Ancients:** If your Healing Herbs don't give enough hit points, then go back to the Herb of Life exhibit with a Topaz Coin. Examine it, then use the Coin. Eat from it again and the Herbs will restore even more hit points, but as your level increases so will the price of the Herbs. Even though they cost more, they are still worth the price. You can still buy the least expensive ones at Mazelton.
*Allen Morano*
*Barstow, CA*

**Maniac Mansion:** Try having Bernard fix the phone downstairs with the tools. Then call Nurse Edna with the phone number by Ted in the Upstairs Bathroom. This will keep you from her while she is on the phone. You will also have a great tip on making prank phone calls.
*Aaron Maupin*
*Fresno, OH*

**Marble Madness:** To get an edge on the other player on the third level, hold the joystick in the southeast position for the marble on the left and southwest for the marble on the right. Hold the button down at the same time, and you'll jump to the middle of the platform, which is a lot easier than navigating the normal route.
*Mike Boone*
*West Chester, OH*

**Might and Magic:** Don't attempt to cross the Desert without your maximum number of Food Units. Each time you move in the Desert, one Food Unit is lost. If you run out of food, your men start losing hit points.
*Brian Stephens*
*Address Unknown*

**Mindshadow:** To escape the Island you must find some Straw and Metal, plus a Vine and a Shell. Go to the cliff and drop everything except the vine. Tie the vine to the rock and climb down to the Cave. Dig for and take the Map and Rock. Climb back up and get all the items you dropped.

Go to the Hut and read the map. Follow the map, and you will find a chest with a bottle of rum in it. Take the rum and reverse the map directions, going to the place at which you awoke. Drop Straw and Bang Metal with Rock.

The ship's captain will want something—give him the rum. On the boat, get the canvas, hit the man in the crew's quarters and go south. In the galley take the meat cleaver and use it to cut the anchor chain. When the boat stops do not go near the captain! Walk off the plank and onto the Royal Navy ship.

Take the sleeping man's hat and money. Buy a fishing pole and fish at the pier. Read the paper and think Arcman. Go to the cafe and give her the hat. At the bar, examine your drink instead of drinking it. Follow the man into the bathroom. Think about the Tycoon. On your way out, take and examine your hat. In the store say "Chandralt." Take the passport, go to the airport and hop onto your plane.

Search the woods until you find a screen with two trees. Dig for the slip with account number on it, then go to the bank and type in your number. Open your box and take the gun. Go to the

hotel room 207 and shoot man. Take message and examine it. Think William and complete the game.
*Justin Stephenson*
*Evansville, Indiana*

**Miner 2049'er:** The easiest way to advance to the next level is by holding down the fire button. You can also hold down the space bar and wait for about four seconds.
*Brian Waggoner*
*Address Unknown*

**Ninja:** This will help you get a lot of extra points. Play the game as you normally would, until you reach Akumas Chamber. Once inside, collect the idol and move toward the wall. You will notice that you can walk through the wall. After exiting, watch your score increase infinitely. This does not occur one hundred percent of the time, so don't be discouraged if it doesn't work on the first try.
*Myron Brown*
*Craigsville, WV*

**The Pawn:** When you are in the palace gardens enter the shed by using the metal key that you have with you. Take the hoe and the rake (you will need them later). When you get to the path blocked by the boulder, (just below the snow-capped mountain), use the rake and the hoe to lift the boulder to get by it. Take off your shirt, then tie the rake and hoe together with it. Lever the boulder with the rake and hoe, and you will be able to proceed up the mountain.
*Doug Cross*
*Sellersburg, IN*

**Phantasie III:** If you save your characters before you send them to training, you can always reload your character and try again if you get low hit points. It's an easy way to get great characters.
*Dan Scott*
*Barrie, Ontario*
*Canada*

**Pharaoh's Curse:** At the beginning of the game, it asks you to enter a password. To get to level 2, type SPHINX. To get to Level 3, type RAIDER.
*Mark Keeling*
*Address Unknown*

**Pirates:** You can gain tons of wealth by killing off your men before dividing up the plunder. (I do not mean letting your men desert, they take gold with them when they desert.) One of the best ways to accomplish this is to attack a city with powerful fortifications (such as Cartegana), which is within marching distance of a friendly port. Attack the town, and when you run very low on men, retreat. Then march to the friendly port, sell everything and divide up the plunder.
*Jeremy Hubble*
*Belton, TX*

**Rambo:** Release the first captive, but instead of going to the helicopter, release the others immediately and then go up to your helicopter. This will save you more time.
*Danny Correia*
*Saint John, New Brunswick*
*Canada*

**Return of the Heracles:** Drop armor and gold to increase your dexterity and speed. Although the game can be played with over 30 characters at once, I suggest that you use no more than three, as it gets too complicated.
*Steven Gabaris*
*Flushing, NY*

**Skate or Die:** In the Pool Joust, your best bet is to wait until your enemy comes up to you and goes back down. When he does this, push the button so you will be right behind him. Stay behind him and when he goes up the side of the pool and starts to come down, he will come into you. Just press the button to hit him.

When your enemy has the bopper, try to follow him but about two inches to the side. When he goes up to a boardslide, do the same thing and you will remain behind him. Just don't stay behind him when you both go up or he will hit you also. Just push up and go up along a path parallel to his.
*Frank Perri*
*Richmond Hill, NY*

**Spy vs. Spy II:** One way to beat the computer is to set its IQ on 1. When the game starts find him quickly, attack him from the right and jab the black spy in the stomach until his strength runs out. If he starts to run in circles, quickly catch him and start jabbing again. He is just trying to regain strength. Once he is dead find the missile parts and go to your submarine. It works every time.
*Jeremy Alexander*
*Address Unknown*

**Star Rank Boxing:** If you are in deep trouble in a fight, press the F1 key to stop the fight and restart the game. I use this tip all the time, and I'm undefeated at the rank of four. When fighting Thunder Thompson, build up on strength. Once you've hurt him, just keep punching until he's down for the count. As with most human fighters, if you hurt them it's in the bag.
*Matt Johns*
*South Euclid, OH*

**Street Sports Baseball:** When you are batting, the best time to swing at the ball is when it's about halfway to the plate.
*Lenny Vaysberg*
*Brooklyn, NY*

**Summer Games I:** To skip the Opening Ceremonies, just press RUN/STOP and RESTORE simultaneously. You will immediately go to the main menu of the game.
*Rob Abramowitz*
*Address Unknown*

**Summer Games II:** In the Javelin, just before you touch the line push to the lower-left corner. You should get a minimum of 70 yards. I hope it works for you!
*Patrick Pochino*
*Address Unknown*

**Treasure Island:** When you get the key from Billy, go directly up to his room. Don't forget to get the newspaper, as you will need it

later. Kick the door and type Put Key in Oil. Then use the key to open the chest. Get everything in it, then go out the window and down the tree. Keep on the well-traveled road. Keep going, and when you see the man by the tree (he's mean), show the newspaper to the doctor and the squire.
*Chad Rowley*
*Address Unknown*

**Ultima IV:** If a character gets poisoned, try to get him to fall asleep via trap or monster. When he wakes up, he will be "unpoisoned."
*Jason Weidman*
*Hellbrook, NY*

**Ultimate Wizard:** When you've chosen to play the game and are asked what level of difficulty you want, you can easily trick the computer. Just highlight "Customized" and instead of putting in your construction disk, just turn the disk over. This starts you off on level 41.
*Matthew Stroh*
*Port Huron, MI*

**World Games:** In Cliff Diving, when you're diving you should first be at the top of the cliff. As you go into the water, don't turn your joystick left right away; wait until you're right in the middle of the surface of the water and the ocean floor. Then turn left. This helped raise my world record from a 93 to a 98.
*Contributor Unknown*

**Way of the Exploding Fist:** This tip works when playing against the computer on all but fifth Dan and occasionally Novice. Right after you bow, do five consecutive flying kicks and one backward kick without releasing the button. The computer does a block and keeps it up while you jump past and nail your opponent from behind. It works almost every time, but will take at least four seconds to perform.
*Mark Kennedy*
*Bakersfield, CA*

**Yie Ar Kung-Fu:** When you encounter Nuncha in Stage 03, push up on the joystick and press the fire button and keep it in this position. When you do this, your man should go into a wild frenzy and start hacking away. If you do this correctly, you will always be able to make it past Stage 03 with at least one energy point left. This move will also help you get past other opponents.
*Zero Batsell*
*Address Unknown*

**Yie Ar Kung-Fu:** When you are up against Pole, just pull back on the joystick and wait until he comes over to you and do sweep kicks. Your timing has to be just right!
*Eddie LeBaron*
*Address Unknown*

**Zork I:** To turn the sound off in the Loud Room and get the platinum bar, just type ECHO.
*Mike Boone*
*West Chester, OH*

## 64 and 128 Software Reviews/Platoon

*Continued from page 18*

tunnels, overhead map of the tunnels and status information. You move through the tunnels looking back and forth between the screen and the map to guide your man in the right direction. There are rooms in the tunnel that contain useful items. In all sections of the game you have limited ammunition, so you must find additional ammunition in these rooms. You also need to locate medical supplies to be used when you get shot by enemy soldiers who pop out of the water and at intersections in the tunnels. Look for two boxes of flares for the next section and a compass for Section 5. Finding objects in one section to be used later in the game gives *Platoon*'s plot added continuity.

After finding the exit ladder in one tunnel room, the disk spins again and you are in Section 4 (The Bunker). In this section you have been spotted leaving the tunnels by enemy soldiers, and they advance on your position. Unfortunately, it is night and you can't see the enemy. You must fire a flare by positioning the crosshair you use in Sections 3 and 4 over the flare gun icon to light up the sky for about five seconds. Only then is it wise to shoot at enemies because your ammo supply is limited. Use the crosshair to shoot enemies and to choose objects in Section 3 and 4. It is always on the screen in Section 3, but only becomes active when an enemy appears or you enter a room. In Section 4, you position the crosshair over an enemy soldier and push the joystick button to fire. The perspective of Section 4 is a simple head-on view of the outside of the bunker.

> The game's plot is only loosely based on the movie's, but captures the spirit of the film.

Section 5 (The Jungle) is the most difficult. You make your way through a maze of paths as in Section 1, but the perspective and obstacles are different. Pushing the joystick left and right moves your man in those directions, while up and down move you up and down the screen, with your man getting smaller or bigger respectively. There are soldiers, mines and barbed wire in your way, and you must continue north to find the exit before a napalm strike hits the jungle. A compass helps you keep on track. There are different routes to the exit, but only one gets you out of the jungle on time.

Section 6 (The Foxhole) is your last mini-mission. You must bomb a renegade sergeant out of the foxhole on the screen with grenades, all while avoiding his grenades. The perspective is the same as in Section 5, but the excitement and music is more intense and fast paced. After a few good direct hits, you make your way into the foxhole for the final screen. Fortunately, you might be compelled to go back and try *Platoon* again to finish with a better score.

In *Platoon* the morale indicator acts as a health indicator would in other games—if it hits zero you die. This is a new idea for games based on movies. Instead of capturing specific sequences from the film, Data East captured the atmosphere. This approach is preferable and should be considered by all companies designing games based on movies.

The graphics are great, the sound gets more and more intense as you go along, and the game encourages you to come back for more. What more could you want?

*Continued from page 58*

course that you have already expunged the virus from your system and disks). You won't have to throw away that precious arcade game or other software because the custom boot block was destroyed (since most arcade games for the Amiga have virus warnings in the manual, it's up to you to make sure you don't get infected or can repair the damage yourself if you do). This program is virtually identical in function to the capability offered by commercial virus protection programs (like Discovery's *VIP*).

Bootback is *not* a replacement for a good virus detection/elimination program like VirusX! To be doubly safe, You should *always* have VirusX present in memory, whether or not you have the custom boot block of a disk backed up with Bootback!

**Keyfiler:** by John Motsinger (Fish 157)

Keyfiler is somewhat similar to Keep (reviewed in the March '88 installment of this column) in that it will also read in an ASCII file containing captured messages from a BBS or online service and then help you to weed out of the capture only the messages you want to look at. Unlike Keep, in which you manually look at each message in order to decide if you want to keep it, Keyfiler automatically picks all messages that contain a specified keyword that you input. Keyfiler's search function is not case-sensitive. Once all the messages have been sorted, then Keyfiler can (at your option) automatically open up an internal text file reader for browsing through the selected messages. Selected messages can be saved as a separate text file.

Although Keyfiler allows you to input any headerkey, gadgets are already coded in for automatic support of messages originating from BBS-PC and TAG-BBS bulletin boards, Usenet, as well as the online services PeopleLink (unfortunately this program has not been updated to reflect PeopleLink's new headerkey, so PeopleLink users will have to input it anyway), BIX, CompuServe and GEnie.

**ScreenZap:** by Lars Clausen (Fish 157)

This program could be considered a poor-man's alternative to GOMF (by Hypertek). Although ScreenZap can't help with windows, it can and will kill *every* screen behind the Workbench screen. But watch out! ScreenZap will kill every screen, whether it's attached to a program that has died or one that is still running. The author plainly states that if a running program tries to write to a screen that has been killed by ScreenZap, the Amiga will crash. So treat this program like fire; don't abuse it or it will return the favor.

**MSDOS:** by Frank Wubbeling (Fish 158; Shareware: 50 DM)

This program can read files from 3.5-inch MS-DOS (or Atari ST) disks and copy them out to AmigaDOS disks. (MSDOS is similar to commercial programs like *DOS-to-DOS* or *Project D.)* The author notes that the shareware version will not recover from disk errors, however the registered version can.

**PCBTool:** by George Vokalek (Fish 158; Shareware: $50)

This is a circuit design program (along the lines of PCLO). PCBTool's features include up to 32 layers (however, only eight are currently supported), snap to grid, variable grid size (down to .05 of an inch), ability to create an HPGL file and much more. Version 2.6 does not support printer dumps (although the author states that this will be supported in version 2.7).

*Caution:* After running this program for about a minute, it froze up when I tried to access the file requester. So be careful when using this program.

**YachtC3:** by Mark Schetlen (Fish 158)

This is an update to the original YachtC program (reviewed in the special games section of the January '88 installment of this column) written by Sheldon Leemon. YachtC3 has some crude, yet pleasing sound effects. Since the original version appeared way back in early 1986, I thought that those who had purchased an Amiga more recently would like to know that there is a nice Yahtzee game out for the Amiga in the public domain.

**Free:** by Joerg Anslik (Fish 159)

A tiny CLI utility that tells in a friendly way how much free memory there is as well as how many tasks are currently running.

**StarChart:** by Ray Larson (Fish 159)

StarChart is a complex astronomy program that can display over 600 celestial objects in the northern hemisphere. StarChart uses a 16-color screen to display stars of various magnitudes with some realism (there is even a option to partially alter the relationship between star magnitude and the size of the star as displayed on the StarChart view window). Of course, you can tell StarChart to display the current viewable sky according to your location's latitude, longitude and current time (StarChart can grab the time directly from the system clock if you prefer). If you click on any star, StarChart will bring up a small window of information about that star, including name, the constellation the star belongs to, magnitude, right ascension and declination as well as color and the size of the star. StarChart can attempt to locate a star given the name (in either common or Greek form) to determine if the star is currently viewable. StarChart can also attempt to find out if a certain constellation is partially or fully visible in the sky at the time.

If you don't remember the names of constellations, just bring up StarChart's separate constellation menu, which lists over 60 different constellations. While the constellation menu is active, you can ask StarChart to display any of the 12 zodiac constellations currently viewable. The constellation menu also has options to show all Messier catalog objects or all NGC catalog objects currently viewable.

Finally, if you are interested in the movement of stars over an elapsed period of time, StarChart has an option to alter the relationship between real time and the sidereal time used by the program.

**TaskControl:** by J. Martin Hippele (Fish 159)

TaskControl has the potential to be a very useful program. However, the program comes with absolutely *no* documentation! Although the program has vivid graphical gadgets that make using it a bit easier, this is no excuse for a total lack of documentation! If you have already used other task-altering programs (like Steve Tibbett's TaskX), then you may indeed want to use this program. But I'd never hand a program like this (especially one that has the potential to crash the Amiga if misused!) to a novice Amiga user.

**TUC:** by Joerg Anslik (Fish 159)

Short for "The Ultimate Clock," TUC's only special feature can be utilized if you first use SetFont to install the special five-point font that comes with TUC. This font allows you to display 132 columns on the screen. With this font installed, TUC will open its special title-bar that displays free chip memory, fast memory and total memory, plus the amount of data on any disk(s) residing in df0:, df1: and df2:, plus the time. While all this is nice, I don't think that most Amiga users will want to

sacrifice their text display just to use this title-bar clock. (After all, there are title-bar programs that already do what TUC does with an eight-point font simply by alternating two different displays every few seconds.)

**DWIP:** by Ken Van Kamp (Fish 160)

If you yearn to be able to print IFF pictures on your daisy-wheel printer, DWIP makes it possible. DWIP use standard ASCII characters and overstriking to perform this feat. DWIP works just fine on standard dot matrix printers as well. DWIP currently works only with standard 320 × 200 resolution IFF pictures and will not print in color even if you have a color printer. The user can input parameters via run-time for such things as red, green and blue relative intensity, orientation, printer pitch, printed picture size, reverse or normal intensity and location.

**IncRev:** by Bryan Ford (Fish 161)

A tiny program that makes it easy for C programmers to keep revision numbers on their programs. The first time IncRev is run, it will create an object module named Rev.o. The every time you run IncRev, it will just increase the longword variable stored in Rev.o. All you have to do as a programmer is to be sure to have IncRev included in your makefile, and access the global symbol Revision stored inside Rev.o to obtain the current revision number for your program.

**CLI_Utilities:** by various authors (Fish 162)

This is a directory Fred Fish put together which contains several small CLI-based utility programs. Only one of the programs in this directory has already been reviewed (Split by Richard Lee Stockton was reviewed in the May '88 installment of this column). Other programs are Filter (by Russell Wallace), StripBin (Fabbian G. DuFoe, III) and XChar (by Victor R. Parkerson) which will strip binary characters from an ASCII text file. Ins_returns (by Russell Wallace) will add carriage returns to any text file. Install (by Ralph Babel) will modify the boot block so that upon boot-up all external drives are ignored, and memory allocation calls will be altered so that only CHIP memory is used. PWFix (by Dan Fish) is a fix for the commercial programmers' utility program *Power Windows* by Inovatronics. SetPrompt (by J. Martin Hippele) easily sets the prompt and/or color for the CLI prompt. Tree (by Markus Stoll) is just like the AmigaDOS DIR command except that Tree lists only directories and not any files. Finally, WordCount (by Russell Wallace) will read any ASCII file and output the number of bytes, number of words and average word length. Although there is no separate documentation for each program Fred's Readme.fnf file is sufficient for these simple programs.

**LabyrinthII:** by Russell Wallace (Fish 162; Shareware: amount not specified)

An interesting text-based adventure game. The author has borrowed places from other eight-bit adventure games (like *Atlantis Adventure* and *Island Adventure)* as well as places from the local college that the author attended. In addition to picking up treasures, you must also find and kill many people (who are named after Wallace's friends or teachers at the same college) using weapons that you collect.

**SetPALorNTSC:** by Peter Kittel (Fish 162)

These two useful tools can help programmers determine if a program is suitable foreign markets. North American programmers can test how their programs operate in PAL video mode, and European programmers can test how their programs operate in NTSC video mode. There is also a sample graphics demo called TDemo (which reminds me of the Electronic Arts Kaleidoscope demo from back in 1985) which helps show how PAL is different from NTSC.

**TES:** by Joerg Anslik (Fish 162)

A program that adds several gadgets to the CLI. There are two permanent gadgets, one which gives you the date, time and amount of free memory, while the other clears all free memory. There are seven other gadgets that can be altered but only by re-compiling the program. By default five gadgets are pre-programmed. The first three fetch directories of df0:, df1: and RAM:. The fourth loads the AmigaDOS INFO command, and the fifth loads the AmigaDOS editor Ed.

**Jessica:** by Dr. Gandalf (AmigaZone file #13711)

A small, but cute digitized animation of Jessica Rabbit that was captured from a TV special about the movie *Who Framed Roger Rabbit.* A nice digitized sound sample complements the animation. This is one Dr. Gandalf animation that even 512K Amiga owners can enjoy.

**Kill:** by George Musser Jr.

A small program that can be considered a poor-man's version of GOMF's Nuke program which kills any task. Kill is not the preferred way to deal with nasty programs, but it's better than nothing.

**ShowFont version 2.0:** by Arthur Johnson, Jr. (AmigaZone file #13701)

This is version 2.0 of ShowFont, last reviewed in the November '88 installment of this column. Version 2.0 has two major improvements. First of all, there is now a file requester that doesn't require you to choose which font you want to look at until the program is loaded. ShowFont now makes it much easier to view many fonts that reside across different directories. This version allows you to use the AmigaDOS ASSIGN command to assign the Fonts: directory to another location while ShowFont is still running. All you have to do now is to ask ShowFont to re-read the current Fonts: directory, and the new set of fonts will appear in the file requester.

**XMake:** by Charles Maier (AmigaZone file #13545)

If the C program you are working on is broken up into many different modules, XMake will help you keep track of your function calls. XMake will alphabetically list in which module(s) and at what line number each and every function that you use in your C program is called.

**Who's Who:** by Harv Laser (AmigaZone file #13941)

This text file is a listing of some of the various Amiga luminaries who frequent PeopleLink's AmigaZone. If you have ever wondered exactly who in the Amiga community can be found online on PeopleLink's AmigaZone, this is the text file to get. In addition to the AmigaZone staff, Who's Who lists various Commodore employees, third-party developers, programmers, authors, trade show coordinators and others of note who frequent the AmigaZone.

**VirusX version 2.0:** by Steve Tibbett (AmigaZone file #13446)

This is a different sort of update to Steve's premier virus detection/elimination program VirusX, last reviewed in the December '88 installment of "Amiga Public Domain." This update is different from all the rest because this new version does not check for any new viruses (since Steve hasn't found any). The only direct im-

provement to VirusX's ability to detect viruses is that VirusX will now check the Cold/Cool/WarmCapture vectors which are often altered by virus programs. This is another enhancement to VirusX's ability to detect unknown viruses (especially if an Amiga virus appears that does not reside in the boot blocks). Instead the main addition to VirusX 2.0 is that it now can display an information window. This window simply lists the number of times that VirusX has detected any of the six known Amiga viruses. The other improvement is that now you do not have to use Runback when running VirusX, since VirusX will not tie up the CLI. The update allows you to close the CLI from which VirusX was loaded.

**VLT:** by Willy Langeveld
(AmigaZone file #14025)

VLT is a powerful VT100 terminal program with added Tektronix 4014/4015 emulation capability, which was based on the source code to Dave Wecker's VT100 program. VLT is perhaps the only PD program at that this time to offer complete support for AREXX, which makes it far more versatile than the supported features alone contained in VLT. Some of the features in VLT itself include Kermit, Xmodem and 1K-Xmodem protocols, onscreen gadget support for 30 function keys, internal macro support (in addition to AREXX macros), 15 different parity settings and screen types. VLT uses a separate screen for graphics, and the graphic screen's menu includes controls for zoom and pan, plus options for a graphic cursor and for a crosshair.

**Access! version 1.42:** by Keith Young
(AmigaZone file #13990; Shareware: $25)

This is version 1.42 of Access! (last discussed in the December '88 installment of this column), which is a terminal program that sports great color graphics and *much* more. The new features in version 1.42 include iconification support not only for Access!, but also for Access!'s rd text display program. The file requester has been improved; you can now ask Access! to bring up a list of devices that are attached at the bottom of the file list. The save configuration option will now save several options in the phone book, including multi-dial, auto-redial, do-script and get-keys boolean gadgets. Those who use the ARP project or have arp.library installed can now call up a file requester when using rd.

Finally there are now script commands for downloading using Xmodem and WXmodem. As a result, there are now Access! scripts that are online on PeopleLink's AmigaZone that will automatically log-on to PeopleLink and download a specific file in the AmigaZone.

**AtomClock:** by Art Steinmetz
(AmigaZone file #13833)

Are you very picky about the time that your Amiga's clock displays? Would you like to be able to set the *exact* time in your Amiga? In that case AtomClock is for you. If you have a modem, AtomClock will automatically dial (no terminal program is required) the U.S. Naval Observatory in Washington, D.C. AtomClock then grabs the exact time from their atomic clock and sets the Amiga system clock to match this time. Although the default is set for Eastern Standard Time, it is easy for anyone living in the continental U.S. to change this parameter. If you live outside the continental U.S., all you have to do is tell AtomClock how many hours your clock is different from Greenwich Mean Time.

As I mentioned last month, it's time to tell you all how you can give me suggestions on which Amiga PD programs were the best in 1988. First of all, I am *not* taking a poll here! What I'm looking for is which programs you feel are the best PD programs in 1988 *and why.* So let me know why you feel these programs deserve special recognition. Please don't select old programs (i.e., programs that appeared before 1988) unless said program received a major upgrade in the past year, since I will only consider older program's new features. If you are recommending a program that you read about in *Commodore Magazine,* please make a note of which issue that PD program was reviewed in. If the program was never reviewed in "Amiga Public Domain," please note that instead. Don't worry too much about categorizing the programs, since the categories that appeared in the Best of Amiga PD '87 feature are bound to be revised. Send all recommendations to:

Best of Amiga PD '88
1015 S. Quincy Ave. #112
Quincy, MA 02169

If you are online on PeopleLink, then just stay tuned as I will be asking for suggestions from the folks who frequent the AmigaZone in late January or February. **The deadline for sending in your suggestions is February 30, 1989, so don't delay!**

The deadline for entries for the First BADGE Killer Demo Contest (remember that last year the "Zeroth" BADGE Killer Demo Contest was held) was extended, so the results still haven't been announced. However already one of the entries (by Dr. Gandalf, no less!) has been released into the public domain, so next month I will be mentioning at least one, and possibly several of the BADGE entries.

As always, I can be reached on the AmigaZone on PeopleLink (ID: G KINSEY), or on the IDCMP BBS (617) 769-3172 (300/1200/2400 baud, running 24 hours a day, addressed to SYSOP). If you have written a public domain/shareware/freely-distributable program, or have obtained one that you think is worth mentioning to all Amiga owners, please attempt to contact me via the above or in care of *Commodore Magazine.* See you next month.

***Fish disks:** For a catalog, send a SASE and four loose stamps or $1 to:*
*Fred Fish*
*1346 W. 10th Place*
*Tempe, AZ 85281*

*To sign up to PeopleLink's AmigaZone, call them at:*
*(800) 524-0100 (voice)*
*(800) 826-8855 (via modem)*

## Software Reviews/SAT Study Guide

*Continued from page 24*

your concentration. It is well-indexed, so you don't have to constantly flip through the pages.

There are only a few minor elements of this software that I found awkward. I would prefer to be able to use both my disk drives, as I find disk swapping tedious. However, there is no option to do this. Additionally, the manual warns you not to type your name in capitals when setting up your scoring disk, but if you do so inadvertently, your drive becomes disoriented, requiring you to begin again. And lastly, I found that I had to disable my fastloading cartridges. Even though the program seemed to load, it didn't function correctly. This is a bit of an inconvenience if you regularly keep such a cartridge installed. However, I don't consider this to be an imperfection in the programming, since the software contains no graphics and it doesn't take an unusually long time to load on its own.

On the whole, I found this to be a thorough preparation for the SAT. This package is easy to learn and use, and will not disappoint you. One of the better ones on the market!

*Continued from page 34*

Because the game is entirely mouse controlled and requires no text input, it is easy to physically play the game, but not easy to win.

avoid instant death. This element of *Shadowgate* is overemphasized. I really wish that there were enough light to see in the dungeons and dark corridors. It would save a lot of aggravation in the end. To pick up a torch, or any object, click on it once and drag the picture into your inventory window and let go.

The graphics are very good in *Shadowgate*. I was pleasantly surprised with the attention to detail in the game. The colors were appropriate, and the animation of various elements of the game was very well done. The sounds are just as realistic, taking advantage of the Amiga's capabilities. I really got what I expected when I opened and played *Shadowgate*—a graphics-intensive adventure that relies heavily on the senses of hearing and sight to convey that gloomy feeling that the Warlock Lord has placed over everything.

Now some hints for those people stuck in the game:

- At the end of the hallway with the candles, you can move a stone in the wall. Do so and see what happens.
- To cross the bridge that you find at one point in the game, you will need something magical that you find later and you can't be carrying much.
- When you come to the levers, you must Operate the third one, second one and then third one again.

These will help a little bit for those stumped in the game.

*Shadowgate* is an example of what can be done with the Amiga if the designers know what they are doing. With *Shadowgate*'s modular and command-object nature and you can't go wrong. If you're really stuck, just randomly click things in the picture window. If the color changes, you can do something with that object. Try this as a general rule upon entering each new room. When you finish you can print out a certificate that says that you've completed the game. Just make sure that you have the correct printer driver active on the Workbench to take advantage of this uncommon feature. In the meantime, good luck and tell the demons I sent you.

*Continued from page 48*

## X-Specs Expectations

The future of X-Specs looks very promising in many fields, but perhaps most of all to video game companies. Imagine a karate game which takes place not on screen but off, where the images appear to be directly in front of you fighting in hand-to-hand combat. The figures move and rotate, literally flying through the air (or appearing to be).

Adventure games as we know them could be totally different: you could hack and slash the enemy in front of you while dodging flames from a fire-breathing dragon.

Science students could do 3D molecular modeling, medical students could study renditions of body imaging, while artists could draw with stereoscopic paint programs. This is just the beginning in the educational field, many more uses are sure to follow.

Companies currently developing software for use with X-Specs are Doug's Math Aquarium, MitchellWare Systems, Mindware, Incognito Software and MicroMagic.

## Summary

The only real drawback to using X-Specs is the incompatibility with either flickerFixer or a long-persistence monitor. Since the glasses display images every sixtieth of a second, these products refuse to accept them causing the X-Specs glasses not to function. This is something to consider if you have invested a lot of money in one of the above products.

X-Specs 3D is a breakthrough in computer technology, and I compliment Haitex Resources for doing a tremendously good job with its package. They will even keep you informed about new products that use the X-Specs glasses and product upgrades if you return the warranty card.

## Hints and Tips

- To enhance the visual effects, turn out the room lights.
- Clean the lens of the X-Specs glasses with solution containing no alcohol. I use a slightly damp, lint-free cloth which works well for removing any dust.
- Whenever you and a friend are using two sets of glasses, make sure that you are not right next to each other. Sometimes sitting too close can cause glare or obstruction. Sit between two to four feet apart and interference will not occur.

*Continued from page 50*

it's not much fun. You rarely get time to think while you try to keep everything moving at a reasonable pace.

When you're at an auditorium event, please be patient when you ask a question. Consider that an auditorium can accommodate up to 200 users, and each user will typically ask more than one question, so it could take a very long time to get to your question. And that's without even considering the interconnecting network response times and other things effecting system performance.

By the way, if you can add information to a particular topic in the auditorium, you can enter your comments via the ASK A QUESTION feature. When the speaker reads your question, he has the option to post the text as a comment or a question when it's displayed to the audience. There shouldn't be any reason to include the word COMMENT within your text since the system automatically adds this when the message is posted as a comment by the speaker. Also, keep in mind that your user id is available to the speakers when they read your question, but it is never displayed to the audience unless included within the text of your message.

One other thing to remember is that archives of most of the online auditorium events are usually available as download files a short while after a particular event. If you asked a question but couldn't stick around to wait for your response, chances are you'll find the information in the archives if the speakers were able to get to it. Other times, some speakers may jot down a few notes and try to respond to your question after an event via E-mail.

One other quick comment before I wrap things up for this month. TravisF suggested passing on information on CitiLink and the wealth of local information available on Q-Link. If you haven't check out CitiLink for your locale recently, you may want to drop in and take a look. You'll find all sorts of helpful information and a place to ask for suggestions and comments on local establishments, points of interest, directions or what have you. There's even local classified areas to supplement the general Classified area in the Mall. If you can't find a CitiLink section for your part of the country, you may want to consider starting a new area if you can interest the folks at Q-Link.

Guess that about wraps things up for another month. As usual, drop me a quick note via E-mail to RBaker if you have any hints or suggestions to share.

*Continued from page 12*

It's not easy to hit the submarine, but since you have an unlimited supply of depth charges, his surrender is just a matter of time. A clock is provided so you can keep track of your times in different battles.

All hands, man your battle stations! And have fun playing Sub Hunt.

*Bob and David Snader*
*Baltimore, MD*

```
10 PRINT"[CLEAR,RVS,YELLOW,SPACE6]
   64 SUB HUNT - BOB & DAVE SNADER
   [SPACE3]"
20 DATA 4,0,1,0,64,0,0,0
30 DATA 0,12,0,3,0,96,0,0
40 DATA 0,0,14,0,247,0,224,160
50 DATA 0,0,0,127,223,127,246,252
60 DATA 244,0,0,0,255,127,063,252
70 DATA 254,255,0,0,0,127,199,31
80 DATA 198,252,254
90 D=182:E=116:M=1:U=255:V=53248:X=150
   :Z=255:TI$="000000"
100 POKE 2041,194:POKE 2042,195
    :POKE V+29,7:FOR T=0 TO 256
110 POKE 12288+T,0:NEXT
    :FOR T=1064 TO 1383:POKE T,160
    :NEXT:POKE 12494,16
120 FOR T=0 TO 16:READ Q,R,S
    :POKE 12288+T,Q:POKE 12352+T,R
    :POKE 12416+T,S:NEXT
130 POKE V+21,3:POKE V+32,13
    :POKE V+39,15:POKE V+40,0
    :POKE V+41,1:POKE V+3,116
140 R=RND(TI)*(ABS(U-X)):FOR T=0 TO R
    :X=X+M:POKE 2040,193+(M<0)
150 POKE V,X:POKE V+1,D:POKE V+2,Z
    :Z=Z-3:GET K$:IF Z<0 THEN Z=255
160 IF K$<>""AND K=0 THEN K=1
    :POKE V+21,7:Y=Z
170 PRINT"[HOME,DOWN2,RVS,L. BLUE,
    SPACE2]TIME":POKE V+5,E:E=E+K
    :POKE V+4,Y
180 IF E>D THEN E=116:K=0:POKE V+21,3
190 IF PEEK(V+30)<>0 THEN POKE V+33,2
    :D=D-5:POKE V+30,0:POKE V+33,6
200 IF D<116 THEN PRINT"[DOWN7]":END
210 PRINT"[HOME,DOWN3,RVS,SPACE2]";
    MID$(TI$,4,1);":";RIGHT$(TI$,2)
    :NEXT
220 M=M*-1:U=U+(M*200):GOTO 140
```

**128 Grandma's Trunk:** In this memory game for young children you are helping Grandma pack her trunk for a trip. Players take turns adding items to the trunk only after remembering, in order, everything that has already been packed. If you use your imagination, some pretty amazing things can fit into Grandma's trunk!

This educational game is good for the very youngest players; the challenge is to remember all the items, and there is never a loser. In addition, items are listed each turn to help players remember what has already been packed. For a more difficult game, this feature can be removed by deleting the GOSUB 180 : PRINT T$ in line 130.

Players must only know the alphabet and have minimal spelling ability. Youngsters will strengthen keyboard skills and spelling as well as memory by playing Grandma's Trunk.

*Bruce R. Young*
*State College, PA*

```
100 T$="[CLEAR,RVS,GREEN,SPACE3]
    GRANDMA'S TRUNK - BRUCE R. YOUNG
    [SPACE4]":COLOR 0,1:COLOR 4,1
    :PRINT T$
110 INPUT"[DOWN2]HOW MANY ITEMS TO
    PUT IN THE TRUNK";N
    :IF N<1 THEN 110:ELSE DIM P$(N)
    :FOR A=1 TO N
120 PRINT T$:PRINT"[DOWN2]
    WHAT WILL YOU PUT":INPUT"[DOWN]
    IN GRANDMA'S TRUNK";P$(A)
    :IF P$(A)=""THEN 120:ELSE PRINT T$
    :PRINT"[DOWN]"
130 GOSUB 180:PRINT T$:PRINT"[DOWN2]
    WHAT'S IN GRANDMA'S TRUNK";
    :FOR B=1 TO A
140 INPUT A$:IF B=A THEN IF
    A$=P$(B)THEN PRINT"[DOWN2]
    THAT'S RIGHT.":GOTO 160
150 IF A$=P$(B)THEN PRINT"[DOWN2]
    THAT'S RIGHT, WHAT ELSE";
    :ELSE PRINT"[DOWN2]WRONG,
     TRY AGAIN.":GOTO 140
160 NEXT:GET KEY A$:NEXT:PRINT T$
    :PRINT"[DOWN4]YOU'RE DONE,
     HAVE A GOOD TRIP!":GOSUB 180
    :PRINT"[DOWN2]PLAYAGAIN?([RVS]Y
    [RVOFF]/[RVS]N[RVOFF])"
170 GET KEY A$:IF A$<>"Y"AND
    A$<>"N"THEN 170:ELSE IF
    A$="Y"THEN RUN:ELSE END
180 PRINT"HERE'S WHAT'S IN GRANDMA'S
    TRUNK:[DOWN]":FOR B=1 TO N
    :PRINT P$(B)
190 NEXT:GET KEY A$:PRINT:RETURN
```

**Marble Game:** Here's a simulation of the little travel toys you had as a kid. (You know—the ones where you had to get all the little balls into the holes at the same time.)

Use a joystick in port 2, and press the fire button to begin playing. The object of the game is not only to get the marbles into the holes, but also to have as many of them as possible drop in the holes at the same instant.

All ten marbles move at the same time and in the same direction until they fall into holes. Then they become obstacles just like the other barriers on the screen.

Everything on the screen is placed randomly each time you play. The obstacles are there to help you, not to hinder you. Use them to arrange the marbles, so as many of them as possible fall into their holes at the same instant.

When all marbles have fallen, move the joystick again to see your score. Scoring is ten points times the square of the number of balls that fall at the same time, so a perfect game is 1000 points. The worst game is 100. My high so far is 460.

*Bradley L. Dina*
*Euclid, OH*

```
100 PRINT"[CLEAR,RVS,SPACE6]
    MARBLE GAME - BRADLEY L. DINA
    [SPACE5]"
110 PRINT"[DOWN]USE JOYSTICK IN PORT
    2."
```

```
120 PRINT"[DOWN]PRESS FIREBUTTON TO
    START."
130 S=1024:C=55296:Y=56320:DIM M(1000)
140 WAIT Y,16,127:POKE 53280,8
    :POKE 53281,0:PRINT"[CLEAR]"
150 FOR J=1 TO 4:READ A(J):NEXT
    :FOR J=0 TO 8:READ D(J):NEXT
160 FOR J=1 TO 4:FOR K=1 TO 10
170 R=INT(RND(0)*1000):IF M(R)>0 THEN
    170
180 POKE R+S,A(J):POKE R+C,J:P(J,K)=R
    :M(R)=1:NEXT K,J
190 IF Z=10 THEN 250
200 Q=0:X=15-(PEEK(Y)AND 15)
    :IF X=0 THEN 200
210 Z=0:B=B+1:FOR J=1 TO 10
    :IF P(3,J)=P(4,J)THEN Z=Z+1
    :GOTO 240
220 N=P(3,J)+D(X):T=PEEK(N+S)
    :IF T=32 THEN GOSUB 260:POKE C+N,3
    :GOTO 240
230 IF T=87 THEN GOSUB 260
    :P(3,J)=P(4,J):Q=Q+1
240 NEXT:SC=SC+Q^2*10:GOTO 190
250 PRINT"[CLEAR,DOWN]SCORE="SC
    :WAIT Y,16,127:RUN
260 POKE P(3,J)+S,32:POKE N+S,81
    :P(3,J)=N:RETURN
270 DATA 66,64,81,87,0,-40,40
280 DATA 0,-1,0,0,0,1
1312 BLOCKS FREE.
```

**Lotto:** Want to win one of your local lotteries? This little program lets you keep track of the winning numbers from the past, giving the percentage of the time that each of them has been drawn. Knowing the past winners may help you in picking future numbers. Or maybe it won't.

I have used the program with our Canadian 649 lottery (six different numbers are selected out of the choices one through 49) with some success. It will work with any similar lottery.

Type in the program as it is listed and save it to disk. Before running it the first time, add this temporary line:

155 GOTO 210

The computer will create a sequential file named SF, then the program will crash with an error. Delete line 155 and run the program again, this time entering the winning numbers from past drawings. Entering a zero ends the prompts, saves your information, and prints the program's analysis onto the screen.

The next time you run the program (the version without line 155), you'll be adding new winners to the list you already saved, and updating the SF file accordingly.

The value assigned to the variable NUM in line 140 determines the highest number the program will keep track of. As printed here, the program will account for numbers from 1–60.

I like to play the numbers with the highest percentages, and I constantly update the sequential files with new winning numbers. When you win yourself, you could send me 10% of your winnings or better yet, a five-year subscription to *Commodore Magazine.*

*Roger Collier*
*Cambridge, Ontario*
*Canada*

```
100 PRINT"[CLEAR,RVS,SPACE10]
    LOTTO - ROGER COLLIER[SPACE8]"
110 REM ** ON 1ST RUN, ADD THIS LINE[
120 REM **    155 GOTO 210
130 REM  ** DELETE IT AFTER FIRST RUN
140 NUM=60:S=INT(NUM/3):R=(NUM/3)-S
    :IF R>0 THEN S=S+1:REM
    NUM=HIGHEST NUMBER
150 N=3*S:DIM A(N):DIM Y$(N)
160 OPEN 2,8,2,"0:SF,S,R":FOR T=1 TO N
    :INPUT#2,A(T):NEXT:CLOSE 2
170 PRINT"[DOWN]ENTER WINNING NUMBERS
    BETWEEN 1 AND";NUM;"[LEFT]:[DOWN]"
180 X=0:INPUT"ZERO (QUIT) OR WINNING
    NUMBER";X:IF X<1 THEN 210
190 IF X>N THEN PRINT"TOO HIGH!"
    :GOTO 180
200 A(X)=A(X)+1:GOTO 180
210 OPEN 2,8,2,"@0:SF,S,W"
    :FOR T=1 TO N:PRINT#2,A(T)
    :Z=A(T)+Z:NEXT:CLOSE 2
220 FOR T=1 TO N:Y$(T)=STR$((A(T)/Z)
    *100):NEXT
230 PRINT"[CLEAR]PERCENTAGES OF
    WINNING NUMBERS:[DOWN]"
    :FOR T=1 TO S
240 PRINT T;TAB(5);LEFT$(Y$(T),5)"%";
    (15);TAB(19);LEFT$(Y$(T+S),5);
250 PRINT"%";TAB(29);(T+S+S);TAB(33);
    LEFT$(Y$(T+S+S),5)"%":NEXT
```

**Sprite Printer:** How often I've wanted to print one of my sprites on paper! Well now I can, and so can you. This program prints the defined sprite around the border of a sheet of paper, and with a little reprogramming it could be used for a number of graphic design purposes.

The program takes the sprite configuration from memory location, block number or DATA statements, and converts them to data for the MPS-803 printer or compatible. If you have a different printer, you may have to add some code to put it into graphics mode.

To use Sprite Printer, load a sprite program and list the DATA statements for the sprite. If they have line numbers under 100, renumber them. While the DATA statements are still on the screen, load Sprite Printer. Move the cursor to the DATA statements and press RETURN on each line number.

Now run the program, ignoring the prompts about memory location and block number. (Just answer them by pressing RETURN.) Your sprite will be printed around the border of the paper in the printer.

If you don't have access to the sprite DATA statements, load your sprite program and run it to put the sprite into memory. Then load and run Sprite Printer, this time responding to the memory or block number prompt. Press RETURN at the prompt you do not use.

If you don't know the memory location or block number of your sprite, try peeking location 2040 after the program with the sprite has run. Use the result to answer the Block Number prompt.

Sprite Printer does a lot of useful work for such a short program, but its esthetics leave something to be desired. Use your ingenuity to improve its user friendliness.

*James Andrews*
*Strong, ME*

```
100 PRINT"[CLEAR,RVS,SPACE5]
    SPRITE PRINTER - JAMES ANDREWS
    [SPACE5]"
110 INPUT"WHAT MEMORY LOCATION";M$
120 INPUT"WHAT BLOCK NUMBER";N$
    :T=1-(M$>"")-(N$>"")*2:B$=CHR$(8)
130 D$=CHR$(15):DIM P(72):OPEN 4,4
    :FOR W=1 TO 3:S=1:FOR Z=1 TO 7:C=0
140 FOR X=1 TO 3:ON T GOSUB 210,220,
    230:B=128:FOR Y=1 TO 8:P=A AND B
150 IF P THEN P(N+C+Y)=P(N+C+Y)+S
160 B=B/2:IF Z=7 THEN A$(W)=A$(W)
    +CHR$(P(N+C+Y)+128)
170 NEXT:C=C+Y-1:NEXT:S=S*2:NEXT
    :N=N+24:GOSUB 200:NEXT:PRINT#4
    :FOR Z=1 TO 26
180 FOR W=1 TO 3:PRINT#4,B$;A$(W);D$;
    TAB(72);B$;A$(W);D$;:NEXT:PRINT#4
    :NEXT
190 FOR W=1 TO 3:GOSUB 200:NEXT
    :PRINT#4:CLOSE 4:END
200 FOR Z=1 TO 20:PRINT#4,B$;A$(W);D$;
    :NEXT:RETURN
210 READ A:RETURN
220 A=PEEK(VAL(M$)+J):J=J+1:RETURN
230 A=PEEK(VAL(N$)*64+J):J=J+1:RETURN
```

**Commodore-Nintendo Compatibility:** If you have a Nintendo Entertainment System and a Commodore computer with a 1702 monitor, you can use the monitor as a display for both.

Connect your Commodore system to the jacks in the back of the 1702. Connect the Nintendo's red and yellow audio/video cable to the front jacks on the 1702; the yellow plug goes into the yellow jack, and the red plug goes into the white jack.

To switch the display between the two systems, use the signal select switch on the back of the 1702.

*Omar Khan*
*Petersburg, VA*

***Final Cartridge* and Game Programs:** If you have this cartridge you can save a lot of time getting past game screens you've already mastered, even if the game doesn't have a save option.

Format a few blank disks and run the game. When you get to the part you have trouble with, just push the freeze button and use the SAVE option (DSAVE or TSAVE on Version 2).

*Jamie Baumgarten*
*Stewardson, IL*

**Use That Test/Demo Disk:** It's probably been a long time since you looked at the Test/Demo disk which came with your disk drive. When you got the drive, in fact, most of the programs on the disk were probably unintelligible to you. Well you've come a long way since then, and you ought to reevaluate the treasures that are recorded on that disk. You can load the programs and give them a try, or even better, you can read the documentation.

I have Test/Demo disks for my 1541 and my 1571, and both contain some elementary documentation in files named "How To Use." On my 1571 disk, "How To Use" is a BASIC program that you load and run to get the documentation; you have the choice of putting the documentation onto the screen or printing it out on the printer.

The disk is full of disk utilities and other programs that are valuable to intermediate and advanced users. Even if you're a beginner you should give these programs a look—they could be your ticket to the next level of understanding.

*Louis F. Sander*
*Pittsburgh, PA*

**RENUMBER as File Counter:** The 128's RENUMBER command provides an easy way to count the files on a disk. Simply LOAD"$",8 and when the load is complete, execute a LIST to see the directory. Notice that there are numbers at the left of each line, indicating how many blocks each file occupies on the disk.

Then in direct mode enter:

RENUMBER 0,1

This will change the block numbers to "line numbers." List the directory again, and the highest line number equals the number of files on the disk.

*Leo Brenneman*
*Erie, PA*

**128 Easy 40/80 Switching:** Everybody knows you can switch between 40- and 80-column display modes by pressing ESC then X. But did you know you can do the same thing with SYS 65375? The former way is simpler when working from the keyboard; the latter is best when switching from within a program.

*Mike Prestwood*
*Milpitas, CA*

**Re-inking Economics:** While it's possible to re-ink your printer ribbons by various home-brew means, a re-inking machine is often a good investment.

I use the MacInker, distributed by Computer Friends of Portland, Oregon and advertised in many computer magazines. I bought it because I print a lot of graphics, which are very hard on ribbons. Here are the results of one year's constant use of ten nylon ribbons:

1. Each ribbon cost me $16 Canadian, including tax, for a total of $160.
2. Over the year, each ribbon has been re-inked six times, for a total of 60 re-inkings. Each time, the print quality got better. Sixty times $16 is $960, and there's a great deal of life left in all the ribbons. My re-inkings cost me about 25 cents each, or $15 for all sixty. So I've saved $945 on the cost of new ribbons.
3. MacInker claims that good nylon ribbons can be re-inked about 30 times each. If mine last that long, that's a total savings of $4,725. With that kind of loot, I can upgrade my 128 to a full Amiga system.

*Norman Groto*
*Duncan, British Columbia*
*Canada*

**Power Bar Placement:** If your power bar gets in the way as much as mine used to, you ought to mount it out of the way on the back of your desk. Take some Velcro and apply it to the back of the power strip, using glue from a hot melt gun. Locate a suitable area on the back of the desk, and use the glue gun to mount the matching strips of Velcro. Let everything cool for an hour before mounting it.

Now your power bar is safely out of the way, and you can still take it to your user group meetings.

*Brian Harris*
*North Canton, OH*

# BEST SERVICE IN THE USA

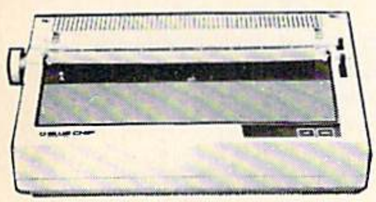
## PRICE IS NOT ENOUGH!

- 90 Day Immediate Replacement
- Experts in Customer Satisfaction
- Free Technical Assistance
- Bulletin Board Service
- Fast, Low Cost Delivery
- No Credit Card Fees
- 15 Day Home Trial
- Free Catalogs

## LETTER QUALITY DAISY WHEEL PRINTER

***For Commodore 64 and 128***

***Free Word Processor and Commodore Interface Included***



- Boldface, Superscripts, Subscripts, underline, and Justify right & left features
- Bi-directional Printing
- Typewriter style Platen, prints on single sheets, envelopes, and Computer Paper
- Fully formed characters - no more dots!
- Automatic Page Numbering
- On Screen Tutorial lessons
- Locate and Replace a word or phrase with another
- High Speed - over 150 words per minute

**Our Low Sale Price**

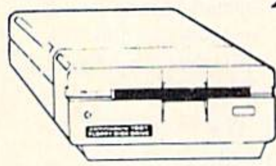
**$89.95**

List $199

## 800K 3½" Disk Drive

Commodore 1581 Works With C64/C64c, and C128/C128D.
Over 800K Bytes of Formatted Storage On Double-Sided 3.5" Microdiskettes.

**Super 81 Utilities Sale $29.95**



**Our Low Sale Price**

**$179.95**

List $249

## SMITH CORONA XD6600 TYPEWRITER

***The Versatile Electronic Typewriter for Home or Office***



- Battery Back-up
- WordEraser
- 60,000 Word Dictionary
- AutoSpell
- Auto Underscore
- Auto Half Space
- End of Page Warning
- Decimal Tab
- 10,12, 15 Pitch
- Auto paper insert

Apple, IBM or CBM Parallel Interface/Cable...Available

**Low Sale Price**

**$199.95**

List $499

## 300/1200/2400 BPS External Modem




**Modem 2400 Features:**

- 2400 BAUD Bell 212A at 300/1200/2400 BPS
- Fully Hayes Compatible
- 7 System Indicator Lights
- Both Tone & Pulse Dialing
- Built-In Speaker with Volume Control
- Buffer That Holds Up To 40 Characters
- Stores Dialed Numbers
- Separate Line and Set Connectors
- Uses RS-232C Interface (Cable Required)

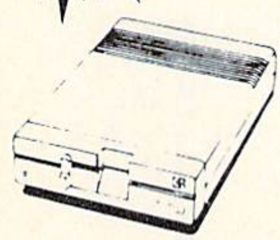
**Our Low Sale Price**

**$114.95**

List $349

## 1541-II Disk Drive

1541/1571 Drive Alignment Program *Sale $19.95*



**Our Low Sale Price**

**$159.95**

List $299

## 300/1200 BPS Migent Pocket Modem

***Free Terminal Software for Commodore***



- Hayes compatible
- Runs on AC or battery
- Turns on/off automatically
- Small enough to put in your pocket
- Plugs directly into your serial port on many computers
- Easy to use; no switches to set
- On-screen status lights show call progress

**Our Low Sale Price**

**$89.95**

List $413

VISA
MASTER CARD
COD

* Prices do not include Shipping Charges. Call to get Your Lowest Delivered Cost. We insure all shipments at no extra cost to you! All packages are normally shipped UPS Ground. 2nd Day or Overnight delivery available. Minimum shipping charge per order is $3.75. Illinois residents add 6½% sales tax. We ship to all points in the U.S; Canada, Puerto Rico, Alaska, Hawaii, Virgin Islands and APO-FPO. (Monitors only shipped in Continental USA) Prices and availability subject to change without notice. Computer Direct will match any valid nationally advertised delivered price on the exact same product & payment method (excluding sales taxes)

The programs which appear in this magazine have been run, tested and checked for bugs and errors. After a program is tested, it is printed on a letter quality printer with some formatting changes. This listing is then photographed directly and printed in the magazine. Using this method ensures the most error-free program listings possible.

Whenever you see a word inside brackets, such as [DOWN], the word represents a keystroke or series of keystrokes on the keyboard. The word [DOWN] would be entered by pressing the cursor-down key. If multiple keystrokes are required, the number will directly follow the word. For example, [DOWN4] would mean to press the cursor-down key four times. If there are multiple words within one set of brackets, enter the keystrokes directly after one another. For example, [DOWN, RIGHT2] would mean to press the cursor-down key once and then the cursor-right key twice. Note: Do not enter the commas.

In addition to these graphic symbols, the keyboard graphics are all represented by a word and a letter. The word is either SHFT or CMD and represents the SHIFT key or the Commodore key. The letter is one of the letters on the keyboard. The combination [SHFT E] would be entered by holding down the SHIFT key and pressing the E. A number following the letter tells you how many times to type the letter. For example, [SHFT A4,CMD B3] would mean to hold the SHIFT key and press the A four times, then hold down the Commodore key and press the B three times.

The following chart tells you the keys to press for any word or words inside of brackets. Refer to this chart whenever you aren't sure what keys to press. The little graphic next to the keystrokes shows you what you will see on the screen.

## SYNTAX ERROR

This is by far the most common error encountered while entering a program. Usually (sorry folks) this means that you have typed something incorrectly on the line the syntax error refers to. If you get the message "?Syntax Error Break In Line 270", type LIST 270 and press RETURN. This will list line 270 to the screen. Look for any non-obvious mistakes like a zero in place of an O or vice-versa. Check for semicolons and colons reversed and extra or missing parenthesis. All of these things will cause a syntax error.

There is only one time a syntax error will tell you the "wrong" line to look at. If the line the syntax error refers to has a function call (i.e., FN A(3)), the syntax error may be in the line that defines the function, rather than the line named in the error message. Look for a line near the beginning of the program (usually) that has DEF FN A(X) in it with an equation following it. Look for a typo in the equation part of this definition.

## ILLEGAL QUANTITY ERROR

This is another common error message. This can also be caused by a typing error, but it is a little harder to find. Once again, list the line number that the error message refers to. There is probably a poke statement on this line. If there is, then the error is referring to what is trying to be poked. A number must be in the range of zero to 255 to be poke-able. For example, the statement POKE 1024,260 would produce an illegal quantity error because 260 is greater than 255.

Most often, the value being poked is a variable (A,X...). This error is telling you that this variable is out of range. If the variable is being read from data statements, then the problem is somewhere in the data statements. Check the data statements for missing commas or other typos.

If the variable is not coming from data statements, then the problem will be a little harder to find. Check each line that contains the variable for typing mistakes.

## OUT OF DATA ERROR

This error message is always related to the data statements in a program. If this error occurs, it means that the program has run out of data items before it was supposed to. It is usually caused by a problem or typo in the data statements. Check first to see if you have left out a whole line of data. Next, check for missing commas between numbers. Reading data from a page of a magazine can be a strain on the brain, so use a ruler or a piece of paper or anything else to help you keep track of where you are as you enter the data.

## OTHER PROBLEMS

It is important to remember that the 64 and the PET/CBM computers will only accept a line up to 80 characters long. The VIC 20 will accept a line up to 88 characters long. Sometimes you will find a line in a program that runs over this number of characters. This is not a mistake in the listing. Sometimes programmers get so carried away crunching programs that they use abbreviated commands to get more than 80 (or 88) characters on one line. You can enter these lines by abbreviating the commands when you enter the line. The abbreviations for BASIC commands are on pages 133-134 of the VIC 20 user guide and 130-131 of the Commodore 64 user's guide.

If you type a line that is longer than 80 (or 88) characters, the computer will act as if everything is ok, until you press RETURN. Then, a syntax error will be displayed (without a line number). Many people write that the computer gives them a syntax error when they type the line, or that the computer refuses to accept a line. Both of these problems are results of typing a line of more than 80 (or 88) characters.

"[HOME]" = UNSHIFTED CLR/ HOME
"[CLEAR]" = SHIFTED CLR/HOME
"[DOWN]" = CURSOR DOWN
"[UP]" = CURSOR UP
"[RIGHT]" = CURSOR RIGHT
"[LEFT]" = CURSOR LEFT
"[RVS]" = CONTROL 9
"[RVOFF]" = CONTROL 0
"[BLACK]" = CONTROL 1
"[WHITE]" = CONTROL 2
"[RED]" = CONTROL 3
"[CYAN]" = CONTROL 4
"[PURPLE]" = CONTROL 5
"[GREEN]" = CONTROL 6
"[BLUE]" = CONTROL 7
"[YELLOW]" = CONTROL 8
"[ORANGE]" = COMMODORE 1
"[BROWN]" = COMMODORE 2
"[L. RED]" = COMMODORE 3
"[GRAY1]" = COMMODORE 4
"[GRAY2]" = COMMODORE 5
"[L. GREEN]" = COMMODORE 6
"[L. BLUE]" = COMMODORE 7
"[GRAY3]" = COMMODORE 8
"[F1]" = F1
"[F2]" = F2
"[F3]" = F3
"[F4]" = F4
"[F5]" = F5
"[F6]" = F6
"[F7]" = F7
"[F8]" = F8
"[POUND]" = ENGLISH POUND
"[SHFT ^]" = PI SYMBOL
"[^]" = UP ARROW

GRAPHIC SYMBOLS WILL BE REPRESENTED AS EITHER THE LETTERS SHFT (SHIFT) AND A KEY ("[SHFT Q,SHFT J,SHFT D,SHFT S]") OR THE LETTERS CMDR (COMMODORE) AND A KEY ("[CMDR Q,CMDR G,COMDR Y,CMDR H]"). IF A SYMBOL IS REPEATED, THE NUMBER OF REPITITIONS WILL BE DIRECTLY AFTER THE KEY AND BEFORE THE COMMA ("[SPACE3,SHFT S4,CMDR M2]").

## THE PROGRAM WON'T RUN!!

This is the hardest of problems to resolve; no error message is displayed, but the program just doesn't run. This can be caused by many small mistakes typing a program in. First check that the program was written for the computer you are using. Check to see if you have left out any lines of the program. Check each line of the program for typos or missing parts. Finally, press the RUN/STOP key while the program is "running". Write down the line the program broke at and try to follow the program backwards from this point, looking for problems.

## IF ALL ELSE FAILS

You've come to the end of your rope. You can't get the program to run and you can't find any errors in your typing. What do you do? As always, we suggest that you try a local user group for help. In a group of even just a dozen members, someone is bound to have typed in the same program. The user group may also have the program on a library disk and be willing to make a copy for you.

If you do get a working copy, be sure to compare it to your own version so that you can learn from your errors and increase you understanding of programming.

If you live in the country, don't have a local user group, or you simply can't get any help, write to us. If you do write to us, include the following information about the program you are having problems with:

The name of the program
The issue of the magazine it was in
The computer you are using
Any error messages and the line numbers
Anything displayed on the screen
A printout of your listing (if possible)

All of this information is helpful in answering your questions about why a program doesn't work. A letter that simply states "I get an error in line 250 whenever I run the program" doesn't give us much to go on. Send your questions to:

*Commodore Magazine*
1200 Wilson Drive
West Chester, PA 19380
ATTN: Program Problem

Have fun with the programs!

# HOW TO USE THE MAGAZINE ENTRY PROGRAMS

The Magazine Entry Programs on the next pages are two BASIC machine language programs that will assist you in entering the programs in this magazine correctly. There are versions for both the Commodore 64 and the Commodore 128. Once the program is in place, it works its magic without you having to do anything else. The program will not let you enter a line if there is a typing mistake on it, and better yet, it identifies the kind of error for you.

## Getting Started

Type in the Magazine Entry Program carefully and save it as you go along (just in case). Once the whole program is typed in, save it again on tape or disk. Now RUN the program. The word POKING will appear on the top of the screen with a number. The number will increment from 49152 up to 49900 (4864-5545 on the 128) and just lets you know that the program is running. If everything is ok, the program will finish running and say DONE. Then type NEW. If there is a problem with the data statements, the program will tell you where to find the problem. Otherwise the program will say "mistake in data statements." Check to see if commas are missing, or if you have used periods instead of commas. Also check the individual data items.

Once the program has run, it is in memory ready to go. To activate the program type SYS49152 (SYS4864 on the 128), and press RETURN. You are now ready to enter the programs from the magazine. To disable the Entry Program, just type KILL [RETURN] on the 64 or SYS4867 on the 128.

The checksums for each line are the same for both the 64 and 128, so you can enter your 64 programs on the 128 if you'd like.

## Typing the Programs

All the BASIC program listings in this magazine that are for the 64 or 128 have an apostrophe followed by four letters at the end of the line (e.g., 'ACDF). If you plan to use the Magazine Entry Program to enter your programs, the apostrophe and letters **should** be entered along with the rest of the line. This is a checksum that the Magazine Entry Program uses.

Enter the line and the letters at the end and then press RETURN, just as you normally would.

If the line is entered correctly, a bell is sounded and the line is entered into the computer's memory (without the characters at the end).

If a mistake was made while entering the line, a noise is sounded and an error message is displayed. Read the error message, then press any key to erase the message and correct the line.

## IMPORTANT

If the Magazine Entry Program sees a mistake on a line, it **does not** enter that line into memory. This makes it impossible to enter a line incorrectly.

## Error Messages and What They Mean

There are five error messages that the Magazine Entry Program uses. Here they are, along with what they mean and how to fix them.

**NO CHECKSUM:** This means that you forgot to enter the apostrophe and the four letters at the end of the line. Move the cursor to the end of the line you just typed and enter the checksum.

**QUOTE:** This means that you forgot (or added) a quote mark somewhere in the line. Check the line in the magazine and correct the quote.

**KEYWORD:** This means that you have either forgotten a command or spelled one of the BASIC keywords (GOTO, PRINT..) incorrectly. Check the line in the magazine again and check your spelling.

**# OF CHARACTERS:** This means that you have either entered extra characters or missed some characters. Check the line in the magazine again. This error message will also occur if you misspell a BASIC command, but create another keyword in doing so. For example, if you misspell PRINT as PRONT, the 64 sees the letter P and R, the BASIC keyword ON and then the letter T. Because it sees the keyword ON, it thinks you've got too many characters, instead of a simple misspelling. Check spelling of BASIC commands if you can't find anything else wrong.

**UNIDENTIFIED:** This means that you have either made a simple spelling error, you typed the wrong line number, or you typed the checksum incorrectly. Spelling errors could be the wrong number of spaces inside quotes, a variable spelled wrong, or a word misspelled. Check the line in the magazine again and correct the mistake.

```
10 PRINT"[CLEAR]POKING -";
20 P=49152 :REM $C000  (END AT
   49900/$C2EC)
30 READ A$:IF A$="END"THEN 110
40 L=ASC(MID$(A$,2,1))
50 H=ASC(MID$(A$,1,1))
60 L=L-48:IF L>9 THEN L=L-7
70 H=H-48:IF H>9 THEN H=H-7
80 PRINT"[HOME,RIGHT12]"P;
90 IF H>15 OR L>15 THEN PRINT
   :PRINT"DATA ERROR IN LINE";
   1000+INT((P-49152)/8):STOP
100 B=H*16+L:POKE P,B:T=T+B:P=P+1
    :GOTO 30
110 IF T<>86200 THEN PRINT
    :PRINT"MISTAKE IN DATA --> CHECK
    DATA STATEMENTS":END
120 PRINT"DONE":END
1000 DATA 4C,1F,C0,00,00,00,00,00
1001 DATA 00,00,00,00,00,0D,00,21
1002 DATA C1,27,C1,2F,C1,3F,C1,4C
1003 DATA C1,EA,EA,EA,4C,54,C0,A2
1004 DATA 05,BD,19,C0,95,73,CA,10
1005 DATA F8,60,60,A0,03,B9,00,02
1006 DATA D9,04,C1,D0,F5,88,10,F5
1007 DATA A0,05,B9,A2,E3,99,73,00
1008 DATA 88,10,F7,A9,00,8D,18,D4
1009 DATA 4C,EF,C0,E6,7A,D0,02,E6
1010 DATA 7B,4C,79,00,A5,9D,F0,F3
1011 DATA A5,7A,C9,FF,D0,ED,A5,7B
1012 DATA C9,01,D0,E7,20,2B,C0,AD
1013 DATA 00,02,20,74,C0,90,DC,A0
1014 DATA 00,4C,A9,C1,C9,30,30,06
1015 DATA C9,3A,10,02,38,60,18,60
1016 DATA C8,B1,7A,C9,20,D0,03,C8
1017 DATA D0,F7,B1,7A,60,18,C8,B1
1018 DATA 7A,F0,37,C9,22,F0,F5,6D
1019 DATA 03,C0,8D,03,C0,AD,04,C0
1020 DATA 69,00,8D,04,C0,4C,8E,C0
1021 DATA 18,6D,05,C0,8D,05,C0,90
1022 DATA 03,EE,06,C0,EE,09,C0,4C
1023 DATA CE,C1,18,6D,08,C0,8D,08
1024 DATA C0,90,03,EE,07,C0,EE,0A
1025 DATA C0,60,0A,A8,B9,0F,C0,85
1026 DATA FB,B9,10,C0,85,FC,A0,00
1027 DATA A9,12,20,D2,FF,B1,FB,F0
1028 DATA 06,20,D2,FF,C8,D0,F6,20
1029 DATA BC,C2,20,E4,FF,F0,FB,A0
1030 DATA 18,B9,08,C1,20,D2,FF,88
1031 DATA 10,F7,68,68,A9,00,8D,00
1032 DATA 02,4C,74,A4,4B,49,4C,4C
1033 DATA 91,91,0D,20,20,20,20,20
1034 DATA 20,20,20,20,20,20,20,20
1035 DATA 20,20,20,20,20,20,20,91
1036 DATA 0D,51,55,4F,54,45,00,4B
1037 DATA 45,59,57,4F,52,44,00,23
1038 DATA 20,4F,46,20,43,48,41,52
1039 DATA 41,43,54,45,52,53,00,55
1040 DATA 4E,49,44,45,4E,54,49,46
1041 DATA 49,45,44,00,4E,4F,20,43
1042 DATA 48,45,43,4B,53,55,4D,00
1043 DATA C8,B1,7A,D0,FB,84,FD,C0
1044 DATA 09,10,03,4C,84,C1,88,88
1045 DATA 88,88,88,B1,7A,C9,27,D0
1046 DATA 13,A9,00,91,7A,C8,A2,00
1047 DATA B1,7A,9D,3C,03,C8,E8,E0
1048 DATA 04,D0,F5,60,A9,04,4C,CA
1049 DATA C0,A0,00,B9,00,02,99,40
1050 DATA 03,F0,F0,C8,D0,F5,A0,00
1051 DATA B9,40,03,F0,E6,99,00,02
1052 DATA C8,D0,F5,20,96,C1,4C,12
1053 DATA C2,A0,09,A9,00,99,03,C0
1054 DATA 8D,3C,03,88,10,F7,A9,80
1055 DATA 85,02,A0,00,20,58,C1,20
1056 DATA 89,C1,20,ED,C1,E6,7A,E6
1057 DATA 7B,20,7C,A5,A0,00,20,80
1058 DATA C0,F0,D0,24,02,F0,06,4C
1059 DATA A8,C0,4C,CE,C1,C9,22,D0
1060 DATA 06,20,8D,C0,4C,CE,C1,20
1061 DATA BA,C0,4C,CE,C1,A0,00,B9
1062 DATA 00,02,20,74,C0,C8,90,0A
1063 DATA 18,6D,07,C0,8D,07,C0,4C
1064 DATA EF,C1,88,A2,00,B9,00,02
1065 DATA 9D,00,02,F0,04,E8,C8,D0
1066 DATA F4,60,18,AD,09,C0,69,41
1067 DATA 8D,09,C0,38,AD,0A,C0,E9
1068 DATA 19,90,06,8D,0A,C0,4C,1C
1069 DATA C2,AD,0A,C0,69,41,8D,0A
1070 DATA C0,AD,03,C0,6D,05,C0,48
1071 DATA AD,04,C0,6D,06,C0,8D,0C
1072 DATA C0,68,6D,08,C0,8D,0B,C0
1073 DATA AD,0C,C0,6D,07,C0,8D,0C
1074 DATA C0,38,E9,19,90,06,8D,0C
1075 DATA C0,4C,52,C2,AD,0C,C0,69
1076 DATA 41,8D,0C,C0,AD,0B,C0,E9
1077 DATA 19,90,06,8D,0B,C0,4C,67
1078 DATA C2,AD,0B,C0,69,41,8D,0B
1079 DATA C0,A0,01,AD,09,C0,CD,3C
1080 DATA 03,D0,20,C8,AD,0A,C0,CD
1081 DATA 3D,03,D0,17,C8,AD,0B,C0
1082 DATA CD,3E,03,D0,0E,AD,0C,C0
1083 DATA CD,3F,03,D0,06,20,CC,C2
1084 DATA 4C,4B,C0,98,48,68,4C,CA
1085 DATA C0,A9,20,8D,00,D4,8D,01
1086 DATA D4,A9,09,8D,05,D4,A9,0F
1087 DATA 8D,18,D4,60,20,A9,C2,A9
1088 DATA 81,20,DF,C2,A9,80,20,DF
1089 DATA C2,4C,D9,C2,20,A9,C2,A9
1090 DATA 11,20,DF,C2,A9,10,20,DF
1091 DATA C2,A9,00,8D,04,D4,60,8D
1092 DATA 04,D4,A2,70,A0,00,88,D0
1093 DATA FD,CA,D0,FA,60,END
```

**END**

```
5 TRAP 200
10 PRINT"[CLEAR]POKING -";
20 P=4864 :REM $1300  (END AT
   5545/$15A9)
30 READ A$:IF A$="END"THEN 110
80 PRINT"[HOME,RIGHT12]"P;
100 B=DEC(A$):POKE P,B:T=T+B:P=P+1
    :GOTO 30
110 IF T<>59382 THEN PRINT
    :PRINT"MISTAKE IN DATA --> CHECK
    DATA STATEMENTS":END
120 PRINT"DONE":END
200 PRINT:PRINT"DATA ERROR IN LINE";
    1000+INT((P-4864)/8):END
1000 DATA 4C,1E,13,4C,3A,13,00,00
1001 DATA 8E,00,F7,00,42,41,51,57
1002 DATA 0D,00,0D,43,08,14,0E,14
1003 DATA 16,14,26,14,33,14,A9,00
1004 DATA 8D,00,FF,AD,04,03,8D,12
1005 DATA 13,AD,05,03,8D,13,13,A2
1006 DATA 4A,A0,13,8E,04,03,8C,05
1007 DATA 03,60,AD,12,13,8D,04,03
1008 DATA AD,13,13,8D,05,03,60,6C
1009 DATA 12,13,A5,7F,D0,F9,AD,00
1010 DATA 02,20,5B,13,90,F1,A0,00
1011 DATA 4C,6F,14,C9,30,30,06,C9
1012 DATA 3A,10,02,38,60,18,60,C8
1013 DATA B1,3D,C9,20,D0,03,C8,D0
1014 DATA F7,B1,3D,60,18,C8,B1,3D
1015 DATA F0,35,C9,22,F0,F5,6D,06
1016 DATA 13,8D,06,13,AD,07,13,69
1017 DATA 00,8D,07,13,4C,75,13,18
1018 DATA 6D,08,13,8D,08,13,90,03
1019 DATA EE,09,13,EE,0C,13,60,18
1020 DATA 6D,0B,13,8D,0B,13,90,03
1021 DATA EE,0A,13,EE,0D,13,60,0A
1022 DATA A8,B9,14,13,85,FB,B9,15
1023 DATA 13,85,FC,A0,00,8C,00,FF
1024 DATA A9,12,20,D2,FF,B1,FB,F0
1025 DATA 06,20,D2,FF,C8,D0,F6,20
1026 DATA 79,15,20,A3,15,20,E4,FF
1027 DATA F0,FB,A0,1B,B9,EF,13,20
1028 DATA D2,FF,88,10,F7,68,68,A9
1029 DATA 00,8D,00,02,4C,B7,4D,91
1030 DATA 91,0D,20,20,20,20,20,20
1031 DATA 20,20,20,20,20,20,20,20
1032 DATA 20,20,20,20,20,20,91,0D
1033 DATA 51,55,4F,54,45,00,4B,45
1034 DATA 59,57,4F,52,44,00,23,20
1035 DATA 4F,46,20,43,48,41,52,41
1036 DATA 43,54,45,52,53,00,55,4E
1037 DATA 49,44,45,4E,54,49,46,49
1038 DATA 45,44,00,4E,4F,20,43,48
1039 DATA 45,43,4B,53,55,4D,00,C8
1040 DATA B1,3D,D0,FB,98,30,04,C9
1041 DATA 06,30,1E,88,88,88,88,88
1042 DATA B1,3D,C9,27,D0,13,A9,00
1043 DATA 91,3D,C8,A2,00,B1,3D,9D
1044 DATA 00,0B,C8,E8,E0,04,D0,F5
1045 DATA 60,4C,5C,15,4C,C5,14,A0
1046 DATA 09,A9,00,99,06,13,8D,00
1047 DATA 0B,88,10,F7,A9,80,85,FD
1048 DATA A0,00,20,3F,14,20,AE,14
1049 DATA 20,0D,43,84,FA,A0,FF,20
1050 DATA 67,13,F0,D8,24,FD,F0,06
1051 DATA 20,8F,13,4C,8F,14,C9,22
1052 DATA D0,06,20,74,13,4C,8F,14
1053 DATA 20,9F,13,4C,8F,14,A0,00
1054 DATA B9,00,02,20,5B,13,C8,90
1055 DATA 0A,18,6D,0A,13,8D,0A,13
1056 DATA 4C,B0,14,88,60,18,AD,0C
1057 DATA 13,69,41,8D,0C,13,38,AD
1058 DATA 0D,13,E9,19,90,06,8D,0D
1059 DATA 13,4C,CF,14,AD,0D,13,69
1060 DATA 41,8D,0D,13,AD,06,13,6D
1061 DATA 08,13,48,AD,07,13,6D,09
1062 DATA 13,8D,0F,13,68,6D,0B,13
1063 DATA 8D,0E,13,AD,0F,13,6D,0A
1064 DATA 13,8D,0F,13,38,E9,19,90
1065 DATA 06,8D,0F,13,4C,05,15,AD
1066 DATA 0F,13,69,41,8D,0F,13,AD
1067 DATA 0E,13,E9,19,90,06,8D,0E
1068 DATA 13,4C,1A,15,AD,0E,13,69
1069 DATA 41,8D,0E,13,A0,01,AD,0C
1070 DATA 13,CD,00,0B,D0,20,C8,AD
1071 DATA 0D,13,CD,01,0B,D0,17,C8
1072 DATA AD,0E,13,CD,02,0B,D0,0E
1073 DATA AD,0F,13,CD,03,0B,D0,06
1074 DATA 20,89,15,A4,FA,60,98,48
1075 DATA 68,4C,AF,13,A9,04,4C,AF
1076 DATA 13,A9,00,8D,00,FF,A9,20
1077 DATA 8D,00,D4,8D,01,D4,A9,09
1078 DATA 8D,05,D4,A9,0F,8D,18,D4
1079 DATA 60,20,61,15,A9,81,20,9C
1080 DATA 15,A9,80,20,9C,15,4C,96
1081 DATA 15,20,61,15,A9,11,20,9C
1082 DATA 15,A9,10,20,9C,15,A9,00
1083 DATA 8D,04,D4,60,8D,04,D4,A2
1084 DATA 70,A0,00,88,D0,FD,CA,D0
1085 DATA FA,60,END
```

**END**

*Continued from page 88*

```
     GRANTED'BABM
472 DATA DO YOU NOW?'BJTK
474 DATA MAYBE - AT SOME TIME -
     SOMETIMES'BBXQ
476 DATA ONLY YOU SHALL KNOW'BQQQ
478 DATA YOUR QUESTION IS GREEK TO
     ME'BXLU
480 DATA MAYBE YES - MAYBE NO'BQAL
482 DATA THE BEST PERSON MAY WELL
     WIN'BXNP
484 DATA A CAT HAS NINE LIVES'BQLP
486 DATA JUST BECAUSE'BLRP
488 DATA MAKE THE RIGHT DECISION'BUCU
490 DATA "THE TRUE ANSWER IS X-RATED,
      MON AMI"'BAGQ
492 DATA IN A MILLION YEARS'BPRN
494 DATA IT IS A BIG UNIVERSE'BQNQ
496 DATA THE RIGHT DECISION WILL'BUDT
498 DATA TOO MUCH'BHLR
500 DATA YOUR LANGUAGE SEEMS
     STRANGE...'BCXH
502 DATA DID YOU PLACE A BET?'BQRG
504 DATA WHY NOT?'BHUF
506 DATA "THE BETTER TEAM,
      OF COURSE!"'BADM
508 DATA "AT DELPHI, NEAR THE FOOT OF
     MOUNT"'BAJQ
510 DATA "PARNASSUS, STOOD THE TEMPLE
     OF"'BAGI
512 DATA "APOLLO, THE GOD OF LIGHT,
      BEAUTY,"'BACL
514 DATA "YOUTH, HEALING, MUSIC,
      POETRY AND,"'BACN
516 DATA "IMPORTANTLY,"'BAEK
518 DATA "IN THE TEMPLE,
      HIS PRIESTESS PYTHIA"'BAHS
520 DATA WOULD ANSWER ALL YOUR
     QUESTIONS.'BDEJ
522 DATA THE DELPHIC ORACLE GOVERNED
     MUCH'BDDL
524 DATA "OF LIFE IN ANCIENT GREECE,
      BUT IT"'BALO
526 DATA WAS OFTEN AMBIGUOUS AND YOU
     HAD TO'BDNP
528 DATA INTERPRET FOR YOURSELF WHAT
     IT WAS'BEQS
530 DATA THAT YOU THOUGHT YOU HEARD
     OR SAW...'BFYL
532 PRINT U3$ "DO YOU WANT TO
     QUESTION THE ORACLE AGAIN"'BDIQ
534 PRINT TAB(17) U3$ "Y" U$ CHR$(47)
     U3$ "N" U$ W$ "?"'DTDM
536 GOSUB 302:POKE VI,7
     :POKE 198,0'DOUM
538 GET Y$:IF Y$="" THEN 538'EINO
540 IF Y$="N" THEN 546'DFDG
542 IF Y$="Y" THEN RUN'ECSI
544 GOSUB 306:POKE 198,0:GOTO 538'DNML
546 POKE S+24,0:FOR I=0 TO 14
     :POKE S%+I,0:NEXT:POKE 657,0'JXDT
548 PRINT H1$:POKE VI,14
     :POKE VI+1,6'EPCQ
550 PRINT TAB(218) U$ "END":CLR
     :END'EIBI
```

END

## ADVERTISERS INDEX



| Advertiser | Reader Response No. | Page No. |
|---|---|---|
| Abacus | 1 | 31 |
| Berkeley Softworks | 2 | 40,41 |
| Briwall | 3 | 54,55 |
| Cinemaware | * | 19 |
| Commodore Business Machines | * | 35,39,46,47 |
| CompuServe | 4 | 25 |
| Computer Direct (Protecto) | 5 | 122,123 |
| Data East | 6 | C3 |
| Epyx | 7 | C2,15 |
| Financial Services Marketing | 8 | 103 |
| First Row Software | 9 | 37 |
| Gamestar | 10 | 5 |
| GE Information Services | * | 51 |
| Joker Software International | 11 | 23 |
| Loadstar | 12 | 1 |
| Lucasfilm Games | 13 | 104 |
| Mastertronics | 14 | 11 |
| MicroIllusions | 15 | 9 |
| MicroProse | 16 | 13 |
| MicroWay | 17 | 53 |
| Montgomery Grant | 18 | 59 |
| New Line Video | 19 | 43 |
| NRI/McGraw Hill | * | 33,81 |
| ORIGIN | 20 | 2,21 |
| Quantum Computer Service | 21 | 44,45 |
| Strategic Simulations | 22 | C4 |
| SubLogic Corporation | 23 | 84 |
| Triton | 24 | 26,27 |
| Tussey Computer Products | 25 | 7 |
| World of Commodore | 26 | 29 |



*No Reader Response Number given at Advertiser's Request.


ROBOCOP™
ORION
LICENSED BY
ocean
PART MAN, PART MACHINE, ALL GAME.
ROBOCOP
DATA EAST

# Advanced Dungeons & Dragons®

## COMPUTER PRODUCTS




## Role-Playing

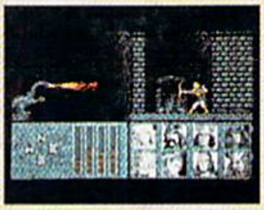
***POOL OF RADIANCE*** fulfills all your gaming fantasies. The legendary ADVANCED DUNGEONS & DRAGONS® role-playing system springs to life on your computer! Embark on dangerous quests in the magical FORGOTTEN REALMS™ game world — made incredibly real by advanced computer animation and combat that adheres strictly to AD&D® game standards. Prepare yourself for the ultimate fantasy role-playing experience!



**IBM**
**APPLE**
**C-64/128**

## Action

***HEROES OF THE LANCE*** gives you non-stop excitement and fully animated action on the mystical DRAGONLANCE® game world. Guide eight Companions, each with different skills, deep into the treacherous ruins of the temple Xak Tsaroth. They will need all of your skills to help them survive the attacks of giant spiders, demons, dragons and countless other terrors. Retrieve the precious Disks of Mishakal if you can!



**IBM**
**C-64/128**
**AMIGA**
**ATARI ST**

## Utility

***DUNGEON MASTERS ASSISTANT, VOLUME I: ENCOUNTERS*** is a utility program designed to help Dungeon Masters generate encounters for AD&D® campaigns. It provides more than 1000 encounters, and over 1300 monsters and characters, including all of the monsters found in AD&D® *Monster Manuals I & II*. DMs can modify the existing data and add original monsters and encounters to the database.



**IBM**
**APPLE**
**C-64/128**



How To Order: Visit your retailer or call 1-800-245-4525. To receive SSI's complete product catalog, please send $1.00 to: Strategic Simulations, Inc., 1046 N. Rengstorff Avenue, Mountain View, CA 94043.

SSI™

STRATEGIC SIMULATIONS, INC.